Water Replenishment District
of Southern California

REGIONAL GROUNDWATER MONITORING REPORT
WATER YEAR 2003-2004

Central and West Coast Basins
Los Angeles County, California

April 2005

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CENTRAL AND WEST COAST BASINS
LOS ANGELES COUNTY, CALIFORNIA
WATER YEAR 2003-2004

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Executive Summary

"To provide, protect and preserve high quality groundwater through innovative, cost-effective and environmentally sensitive basin management practices for the benefit of residents and businesses of the Central and West Coast Basins."

WRD Mission Statement

In 1959, the Water Replenishment District of Southern California (WRD) was formed by the electorate and the State of California to protect and preserve the quantity and quality of the groundwater supplies in the Central and West Coast groundwater basins (CWCB) in Southern Los Angeles County. Today, these basins supply 40 percent of the water used by 4 million people in the region. This constitutes WRD's service area—covering 43 cities in a 420-square mile area.

WRD is responsible for managing and safeguarding these basins. It's focus in on maximizing the groundwater basins' capacity, preserving them for future use, and ensuring high water quality. To that end, the WRD provides this Regional Groundwater Monitoring Report for Water year 2003-2004.

WRD's staff of highly skilled hydrogeologists, engineers, planners, and Geographic Information System (GIS) specialists engage year round in extensive collection, analysis, and reporting of critical groundwater data. They work continually to sample, track, model, forecast, and plan for replenishment and water quality activities to ensure proper groundwater management and to properly plan for the future.

These efforts result in the annual publication of the District's two main reports: the Engineering Survey and Report, issued since 1960, and this Regional Groundwater Monitoring Report, issued since 1973. This year's monitoring report is the most comprehensive report to date. This report presents the latest information on groundwater replenishment activities, groundwater production, groundwater levels, and an extensive section on groundwater quality.

Groundwater Production

This year's groundwater production increased by 2.7% from the previous year, going from 241,871 acre feet (AF) to 248,334 AF. This nearly matches the average production levels over the past five years of 248,141 AF.

Groundwater Replenishment

Artificial replenishment at the Montebello Forebay Spreading Grounds totaled almost 103,000 AF. Recycled water made up 44% of the replenishment, while the remainder was made up of imported water, underflow from the San Gabriel Basin and infiltration of rainfall and irrigation.

At the Seawater intrusion barriers, 25,030 AF were injected, most of which was imported water with 3,669 AF being recycled water.

Groundwater Quality

In general, groundwater in the main producing aquifers of the basins is of good quality and is suitable for use now and in the future. Localized areas of marginal to poor water quality exist—primarily on the basin margins and in the shallower and deeper aquifers impacted by seawater intrusion.

Volatile organic compounds (VOC's) primarily perchloroethylene (PCE) and trichloroethylene (TCE) are present in the Central Basin and have impacted many production wells. However, most wells indicate levels of VOC's below enforceable regulatory levels. Those with higher levels require treatment prior to use as drinking water. PCE and TCE have not been detected in any production wells evaluated in this report.

The WRD has taken a proactive approach to protecting the basins in the face of emerging water quality issues. The WRD has determined that the special interest constituents including arsenic, hexavalent chromium, methyl tertiary, butyl ether (MTBE, total organic carbon, color and perchlorate do not pose a substantive threat to the basins at this time.

Challenges Ahead

The WRD remains committed to its statutory charge to manage the public resource of the basins' storage capacity for the common good. To that end, innovative projects and programs will be implemented to ensure a continued reliable source of high quality groundwater, reduce the reliance on costly imported water, and optimize the region's water resources for the WRD's groundwater users.

The WRD is pursuing a major conjunctive use project to store excess water underground during wet years for use in the future and during droughts; WRD is also working with land owners and regulatory agencies to identify contamination threats and monitor clean-up activities. The WRD is reaching out to elected and public officials throughout the region in an effort to implement these new initiatives to optimize the management of the basins for the benefit of all.

For more information see the WRD web site at http://www.wrd.org, or by calling WRD at 562-921-5521. WRD welcomes any comments or suggestions to this Annual Regional Groundwater Monitoring Report.

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SECTION 1
INTRODUCTION

The Water Replenishment District of Southern California (WRD or the District) manages groundwater replenishment and water quality activities of the Central and West Coast Basins (CWCB) in southern Los Angeles County (**Figure 1.1**). Our mission is to protect and preserve high-quality groundwater in the basins through innovative, cost-effective, and environmentally sensitive management practices for the benefit of residents and businesses of the Central and West Coast Basins. This mission is being accomplished by meeting WRD goals relating to water quality, water supply, basin management, stakeholder communications, and efficient operations of the organization.

A major aspect to meeting these goals is to have a thorough and current understanding of groundwater conditions in the CWCB and to predict and prepare for future conditions. This is achieved through groundwater monitoring, modeling, and planning, which provide the necessary information to determine the "health" of the basins. This information in turn provides WRD, the pumpers in the District, other interested stakeholders, and the public with the knowledge necessary for responsible water resources planning and management.

1.1 BACKGROUND OF THE REGIONAL GROUNDWATER MONITORING PROGRAM

Since its formation in 1959, the WRD has been actively involved in groundwater replenishment, water quality monitoring, contaminant prevention, data management, and data publication. Historical overpumping of the CWCB caused overdraft, seawater intrusion and other groundwater management problems related to supply and quality. Adjudication of the basins in the early 1960s set a limit on allowable production to control the overpumping. Along with adjudication, WRD was formed to address issues of groundwater recharge and groundwater quality. The Regional Groundwater Monitoring Program is an important District program to track water levels and water

quality in the CWCB to ensure the usability of this groundwater reservoir.

Prior to 1995, WRD relied heavily upon groundwater monitoring data collected, interpreted, and presented by other entities such as the Los Angeles County Department of Public Works (LACDPW), the California Department of Water Resources (DWR), and the private sector for understanding current basin conditions. This included WRD's former basinwide monitoring program, and the ongoing but separate Montebello Forebay recycled water monitoring for regulatory compliance. However, these data have been collected primarily from production wells, which are typically screened across multiple aquifers to maximize water inflow. This results in a mixing of the waters from the perforated aquifers inside of the well casing, causing an averaging of the water qualities and water levels.

In order to obtain more accurate data for specific aquifers from which to infer localized water quality and level conditions, depth-specific (nested) monitoring wells that tap discrete aquifer zones are necessary. **Figure 1.2** illustrates the capabilities of nested monitoring wells to assess individual aquifers compared to typical production wells. Data are generally provided for a water year (WY), which occurs from October 1 to the following September 30. During WY 1994-1995, WRD and the United States Geological Survey (USGS) began a cooperative study to improve the understanding of the geohydrology and geochemistry of the CWCB. The study was documented in the recently published USGS Water Resources Investigations Report 03-4065, *Geohydrology, Geochemistry and Ground-Water Simulation-Optimization of the Central and West Coast Basins, Los Angeles County, California* (Reichard et al. 2003). This study was the nucleus of the Regional Groundwater Monitoring Program. In addition to compiling existing available data, this study recognized that sampling of production wells did not adequately characterize the layered multiple aquifer systems of the CWCB. The study focuses on new data collection through drilling and construction of nested groundwater monitoring wells and conducting depth-specific water quality sampling. **Figure 1.3** shows the locations of the WRD nested monitoring well network. Construction details for the WRD wells are presented in **Table 1.1.**

An *Annual Report on the Results of Water Quality Monitoring* (*Annual Report*) was published by the WRD from Water Years 1972-1973 through 1994-1995, and was based on a basinwide monitoring program outlined in the *Report on Program of Water Quality Monitoring* (Bookman-Edmonston Engineering, Inc., January 1973). The latter report recommended a substantial expansion of the then-existing program, particularly the development of a detailed and intensive program of monitoring the quality of groundwater in the Montebello Forebay. The Regional Groundwater Monitoring Program is designed to serve as an expanded, more representative basinwide monitoring program for the CWCB. This Regional Groundwater Monitoring Report is published in lieu of the previous *Annual Reports*.

1.2 CONCEPTUAL HYDROGEOLOGIC MODEL

The Regional Groundwater Monitoring Program changes the focus of groundwater monitoring efforts in the CWCB from production zones with averaged groundwater level and groundwater quality information, to a layered multiple aquifer system with individual zones of groundwater quality and groundwater levels. WRD views each aquifer as a significant component of the groundwater system and understands the importance of the interrelationships between water-bearing zones. The most accepted hydrogeologic description of the basin and the names of water-bearing aquifers were provided in California Department of Water Resources, *Bulletin No. 104: Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County, Appendix A – Ground Water Geology* (DWR, 1961). WRD generally follows the naming conventions of this report, redefining certain aspects when new data become available.

The locations of idealized geologic cross-sections AA' and BB' through the CWCB are shown on **Figure 1.3**. Cross-sections AA' and BB' are presented on **Figures 1.4 and 1.5**, respectively. These cross-sections illustrate a simplified aquifer system in the CWCB. The main potable production aquifers are shown, including the deeper Lynwood, Silverado, and Sunnyside aquifers of the lower Pleistocene San Pedro Formation. Other main shallower aquifers, which locally produce potable water, include

the Gage and Gardena aquifers of the upper Pleistocene Lakewood Formation. Also shown on the geologic sections are the aquitards separating the aquifers. Throughout this report the aquifers shown on the geologic sections are referred to as discrete groundwater zones. Many references are made to the Silverado aquifer producing zone, which typically includes the Lynwood aquifer.

1.3 GIS DEVELOPMENT AND IMPLEMENTATION

WRD is using a sophisticated geographic information system (GIS) as a tool for CWCB groundwater management. Much of the GIS was compiled during the WRD/USGS cooperative study. The GIS links spatially related information (e.g., well locations, geologic features, cultural features, contaminated sites) to data on well production, water quality, water levels, and replenishment amounts. WRD uses the industry standard ArcGIS® software for data analysis and preparation of spatially related information (maps and graphics tied to data). WRD utilizes global positioning system (GPS) technology to survey the locations of basinwide production wells and nested monitoring wells for use in the GIS database.

WRD is constantly updating the GIS with new data and newly acquired archives of data acquired by staff or provided by pumpers and other agencies. The GIS is a primary tool for WRD and other water-related agencies to more accurately track current and past use of groundwater, track groundwater quality, and project future water demands, thus allowing improved management of the basins.

In early 2003, WRD completed the development of its Internet-based GIS, which was made available to the public. WRD's Internet-based GIS can be accessed through our web site at http://gis.wrd.org. The web site provides the public with access to much of the water level and water quality data contained in this report. The well information can be accessed through either an interactive map or a text search and the resulting data can be displayed in both tabular and graphical formats.

1.4 SCOPE OF REPORT

The purpose of this report is to update information on groundwater conditions in the CWCB for WY 2003-2004, and to discuss the status of the Regional Groundwater Monitoring Program. Section 1 has provided an overview of WRD and the WRD Regional Groundwater Monitoring Program. Section 2 discusses the types, quantities, and quality of different source waters used by WRD for replenishment at the Montebello Forebay spreading grounds and the seawater intrusion barriers. Section 3 summarizes groundwater production in the CWCB, and evaluates water level, storage change, and groundwater elevation data for WY 2003-2004. Section 4 presents water quality data for the WRD nested monitoring wells and basinwide production wells. Section 5 summarizes the findings of this report. Section 6 describes future regional groundwater monitoring activities. Section 7 lists the references used in this report.

SECTION 2
GROUNDWATER REPLENISHMENT

Natural groundwater replenishment occurs through the percolation of precipitation and applied waters (such as irrigation), conservation of stormwater in spreading grounds, and underflow from adjacent basins. Although it occurs to an extent within the CWCB, there is insufficient natural replenishment in the CWCB to sustain the groundwater pumping that takes place. Therefore, WRD provides for artificial groundwater replenishment through the purchase of imported and recycled, water to make up the difference. Artificial replenishment occurs at the Rio Hondo and San Gabriel River Spreading Grounds, at the Alamitos Gap, Dominguez Gap, and West Coast Basin Seawater Barriers, and through the District's In-Lieu program. This section describes the sources, quantities, and quality of water used for artificial replenishment in the CWCB during WY 2003-2004.

2.1 SOURCES OF REPLENISHMENT WATER

Replenishment water comes from imported, recycled, and local sources. The types used by WRD are described below:

- Imported water: This source comes from the Colorado River or the State Water Project via Metropolitan Water District (MWD) pipelines and aqueducts. WRD purchases this water both for surface recharge at the Montebello Forebay spreading grounds and for injection at the seawater intrusion barriers. For the spreading grounds, the water is replenished without further treatment from the sources, as the source quality is high and the water is treated naturally as it percolates through the vadose zone soils. For the seawater barrier wells, the water is treated to meet all drinking water standards before injection, since it will not be moving through vadose zone soils. Spreading water is available seasonally from MWD if they have excess reserves, whereas a premium price is paid for non-interruptible injection water at the barriers to maintain deliveries throughout the year and during droughts.
- Recycled water: This resource's relatively low unit cost and good quality coupled

with its year-round availability makes it highly desirable as a replenishment source. However, its use is limited by regulatory agencies. Tertiary-treated recycled water is used for replenishment at the spreading grounds. Tertiary-treated recycled water followed by additional microfiltration and reverse osmosis treatment is used for injection into the West Coast Basin Barrier Project, and will soon be used at the Dominguez Gap and Alamitos Barrier Projects.

- Make-Up Water: "Make-Up Water" is occasionally delivered to the Montebello Forebay spreading grounds from the Main San Gabriel Basin. This water, termed the "Lower Area Annual Entitlement", was established in accordance with the judgment in Case No. 722647 of Los Angeles County, City of Long Beach, et al vs. San Gabriel Valley Water Co., et al (Long Beach Judgment). During WY 2003-2004, Make-Up Water was not delivered to the Lower Area.
- Local water: Local water consists of channel flow from local sources (e.g., storm-flow, rising water, incidental surface flows) conserved in the Montebello Forebay spreading grounds by the LACDPW. Precipitation falling on the basin floor and water applied to the ground (such as for irrigation) are also considered to be local water as they also percolate into the subsurface and contribute to recharge.
- Subsurface water: Groundwater flows into and out of the CWCB from adjacent groundwater basins (Santa Monica, Hollywood, Main San Gabriel, Orange County) and the Pacific Ocean. The amounts of inflow and outflow depend on the hydrogeologic properties of the aquifers and the groundwater gradients at the basin boundaries.

2.2 QUANTITIES OF REPLENISHMENT WATER

Current and historical quantities of water conserved (replenished) in the Montebello Forebay spreading grounds are presented in **Table 2.1**. Current and historical seawater barrier well injection amounts are shown on **Table 2.2**. The calculations required to determine the total quantity of artificial replenishment water necessary for the CWCB prior to each water year are outlined in the District's annual *Engineering Survey and Report* (ESR).

At the Montebello Forebay spreading grounds (**Table 2.1**), the following is noted for the quantities of replenishment water for WY 2003-2004:

- Total water conserved in the Rio Hondo System (consisting of the Rio Hondo Spreading Grounds and percolation behind the Whittier Narrows Dam) and the San Gabriel System (consisting of the unlined San Gabriel River south of the Whittier Narrows Dam and the San Gabriel River Spreading Grounds) was 102,911 acre-feet (AF). This is less than the historical running average of 126,186 AF (WY 1963-64 through 2002-03).

- The quantity of local water conserved during WY 2003-2004 was 30,467 AF, less than the historical running average of 49,094 AF, and less than the previous 5-year average of 33,364 AF (WY 1999-00 through 2002-03).

- The quantity of imported water conserved during WY 2003-2004 was 27,520 AF. This is less than the long-term running average of 44,654 AF, and more than the previous 5- year average of 26,424 AF.

- The quantity of recycled water conserved during WY 2003-2004 was 44,924 AF. This is more than the long-term running average of 32,438 AF but less than the previous 5-year average of 46,271 AF.

- In addition to the water sources shown on **Table 2.1**, the Montebello Forebay received an estimated 3,665 AF of recharge due to infiltration of precipitation falling on the forebay floor, and an estimated 26,400 AF of groundwater underflow from San Gabriel Valley. The total replenishment was therefore 132,976 AF, of which 34% was recycled water. The three-year average recycled water used was 49,387 AF, and the three-year averaged percent recycled water component was 33.9%.

At the seawater intrusion barriers (**Table 2.2**), the following trends are noted for the quantities of artificial replenishment water for WY 2003-2004:

- At the West Coast Basin Barrier, 12,973 AF were injected, which included 9,304 AF of imported water and 3,669 AF of recycled water (28%). The current limit for recycled water injection is 50% of the total supply. The long-term injection average from WY 1963-64 through 2003/04 was 20,470 AF. The 5-year average (1999-00 through 2002-03) was 17,808 AF. Injection amounts were lower in 2003-2004 for several reasons; the DPW is installing a telemetry system at the barrier which required suspending injection for several months, WRD requested some reductions due to localized over-injection, and WBMWD had difficulty producing recycled water due to influent quality from the Hyperion Plant source.

- At the Dominguez Gap Barrier, 6,089 AF were injected. The long-term average from WY 1970/71 through 2003/04 was 5,940 AF, and the 5-year average (1999-00 through 2002-03) was 5,907 AF. To date, only imported water has been injected at the Dominguez Gap Barrier; however, WRD and the City of Los Angeles plan to augment this source with recycled water in the near future. The DPW has recently installed 33 new wells at the Dominguez Gap and expects injection amounts could double.

- At the Alamitos Barrier, both WRD and Orange County Water District (OCWD) provide injection water; WRD for wells on the Los Angeles County side, and OWCD for wells on the Orange County side. During WY 2003-2004 a total of 5,968 AF were injected into the barrier system, 3,876 by WRD and 2,092 by OCWD. The long-term average from WY 1964-65 through 2003-04 was 5,115 AF, and the 5-year average (1999-00 through 2003-04) was 5,603 AF. To date, only imported water has been injected at the Alamitos Barrier; however, WRD plans to augment this source with recycled water in the near future.

2.3 QUALITY OF REPLENISHMENT WATER

This section discusses water quality data for key parameters in WRD replenishment water and local surface water. Although numerous other constituents are monitored, the

constituents reported here are the ones found to be most prevalent and at elevated levels or of current regulatory interest in wells in the CWCB. The data are classified according to their sources. The key water quality parameters of this discussion are: total dissolved solids (TDS), hardness, sulfate, chloride, nitrogen, iron, manganese, trichloroethylene (TCE), tetrachloroethylene (PCE), total organic carbon (TOC), and perchlorate. Monitoring the concentrations of these constituents is necessary for an understanding of the general chemical nature of the recharge source, and its suitability for replenishing the groundwater basins. A brief description of each parameter follows. Various criteria are used in discussing water quality. An Action Level (AL) is a non-regulatory health-based advisory level established by the California Department of Health Services (DHS) based on preliminary review of health effects studies for which enforceable levels have not been established. Effective January 1, 2005, AL's have been replaced with Notification and Response Levels per California Health and Safety Code Section 116455. Since this report presents data prior to this effective date, references to AL's are still use din this report. A Public Health Goal (PHG) is an advisory level that is developed by the Office of Environmental Health Hazard Assessment (OEHHA) after a thorough review of health effects and risk assessment studies. A Primary Maximum Contaminant Level (MCL) is an enforceable drinking water standard that DHS establishes after health effects, risk assessments, detection capability, treatability and economic feasibility are considered. A Secondary MCL is established for constituents that impact aesthetics of the water, such as taste, odor, and color, and do not impact health. It should also be noted that constituents with ALs often are considered unregulated contaminants for which additional monitoring may be required to determine the extent of exposure before PHG's and MCLs are established.

- Total Dissolved Solids (TDS): TDS is a measure of the total mineralization of water and is indicative of general water quality. In general, the higher the TDS, the less desirable a given water supply is for beneficial uses. The (secondary) MCL for TDS ranges from 500 milligrams per liter (mg/L), which is the recommended level, to 1,500 mg/L, which is the upper limit allowed for short-term use.
- Hardness: For most municipal uses, hardness (a measure of calcium and magnesium

ions that combine with carbonates to form a precipitate or solid substance in water) is an important mineral characteristic of water. Some degree of hardness is considered to be beneficial to human health; studies suggest that it helps to lower cholesterol levels. Excessive hardness is undesirable because it results in increased consumption of cleaning products, scale on pipes, and other undesirable effects. There is no MCL for hardness, but generally waters are considered soft when it is less than 75 mg/L and very hard when greater than 300 mg/L.

- Sulfate: Sulfate is generally not a water quality concern in the CWCB. In excess amounts, it can act as a laxative. DHS has established a Secondary MCL for sulfate at 250 mg/L and up to 600 mg/L for short-term use. Sulfate is, however a very useful water quality constituent in the CWCB for use in tracking flow and observing travel times of artificial recharge water. Colorado River water and recycled water used for recharge in CWCB have characteristically high sulfate concentrations, while native groundwater and State Water Project water have relatively low sulfate concentrations.
- Chloride: Chloride in reasonable concentrations is not harmful to human health. It is the characteristic constituent used to identify seawater intrusion. While recharge sources contain moderate concentrations of chloride, these concentrations are well below the Secondary MCL for chloride of 250 mg/L. Water containing chloride concentrations above this level begins to taste salty. When the ratio of chloride to other anions such as sulfate and bicarbonate becomes high, there is a strong indication of seawater intrusion or possible industrial brine impact to groundwater.
- Nitrogen species: DHS standards limit two forms of nitrogen, nitrite and nitrate, in drinking water. Nitrate cannot exceed concentrations of 45 mg/L (measured as Nitrate), corresponding to 10 mg/L as Nitrogen. Nitrite is limited to 1 mg/L as Nitrogen. The combined total of nitrite and nitrate cannot exceed 10 mg/L. These constituents are of concern because they can cause anoxia in infants. When consumed in excess of these limits, they reduce the uptake of oxygen causing shortness of breath, lethargy, and a bluish color. Continued exposure to these constituents in excess of the limits can be fatal.
- Iron: Typically, iron occurs naturally in groundwater. It is also leached from minerals or steel pipes as rust. Small concentrations of iron in water can affect the

water's suitability for domestic or industrial purposes. DHS limits the amount of iron in drinking water to 0.3 mg/L because iron in water stains plumbing fixtures and clothing, incrusts well screens, and clogs pipes and may impart a salty taste. It is considered an essential nutrient, important for human health, and does not pose significant health effects except in special cases. Some industrial processes cannot tolerate more than 0.1 mg/L iron.

- Manganese: Manganese, also naturally occurring, is objectionable in water in the same general way as iron. Stains caused by manganese are black and are more unsightly and harder to remove than those caused by iron. The DHS MCL for manganese is 50 micrograms per liter (µg/L). Like iron it is considered an essential nutrient for human health.
- TCE: Trichloroethylene is a solvent used in metal degreasing, textile processing, and dry cleaning. Because of its potential health effects, it has been classified as a probable human carcinogen. The MCL for TCE in drinking water is 5 µg /L.
- PCE: Tetrachloroethylene (also known as perchloroethylene, perc, perclene, and perchlor) is a solvent used heavily in the dry cleaning industry, as well as in metal degreasing and textile processing. Like TCE, PCE is a probable carcinogen. The MCL for PCE in drinking water is 5 µg/L.
- Total Organic Carbon: Total organic carbon (TOC) is the broadest measure of all organic molecules in water. TOC can be naturally occurring, wastewater-derived, or a combination of both (National Research Counsel, 1998). While there is no MCL established for TOC, regulators are generally concerned with wastewater derived TOC as a measurable component of recycled water.
- Perchlorate: This is used in a variety of defense and industrial applications, including being a primary ingredient in solid propellant for rockets, missiles, road flares, and fireworks, a component of air bag inflators, additives in lubricating oils, in tanning and finishing leather, and the production of paints and enamels. When ingested, it can inhibit the proper uptake of iodide by the thyroid gland, which causes a decrease in hormones for normal growth and development and normal metabolism. The DHS action level was revised on March 11, 2004 to 6 µg/L. Effective January 1, 2005, this action level for perchlorate is now referenced as the perchlorate notification level.

Quality of Imported Water

As stated previously, treated imported water is used at the seawater intrusion barriers. This water meets all drinking water standards and is suitable for direct injection. Average water quality data for treated imported water are presented in **Table 2.3**.

Untreated imported water ("raw water") is used for recharge at the Montebello Forebay spreading grounds. The average TDS concentration of Colorado River water has decreased over recent Water Years, from 682 mg/L to 593 mg/L. The average TDS concentration of State Project Water has also shown a modest decreasing trend, from 320 mg/L to 242 mg/L.

The average hardness of Colorado River water has also decreased over recent years, from 322 mg/L to 288 mg/L. The average hardness of untreated State Project Water has also shown a decreasing trend, from 173 mg/L to 99 mg/L.

The average nitrogen concentration of Colorado River water has decreased from the previous reported water year, dropping from 0.23 mg/L to below detection limits. The average nitrogen concentration of State Project Water has increased over the previous reported water year, from 0.54 mg/L to 0.70 mg/L. Recently and historically, both Colorado River and State Project Water nitrogen concentrations have been far below the MCL.

The average iron concentrations of untreated Colorado River Water have remained below detection limits. Iron in State Project Water was 0.124 mg/L. Manganese in State Project water averaged 22 µg/L. Both Colorado River and State Project Water iron and manganese concentrations have historically been below the MCL.

The average chloride and sulfate concentrations of Colorado River Water and State Project Water have not changed significantly over the past several years. Both Colorado River and State Project Water chloride and sulfate concentrations have historically been

below their respective MCLs.

According to the MWD, TCE and PCE have not been detected in Colorado River Water or State Project Water during the reporting period.

Quality of Recycled Water

Recycled water is introduced into the CWCB through percolation and injection. In the Montebello Forebay, Recycled water from the Whittier Narrows Water Reclamation Plant (WRP), San Jose Creek East WRP, San Jose Creek West WRP, and Pomona WRP is diverted into spreading basins where it percolates into the subsurface. The water quality from these WRPs is carefully controlled and monitored, as required by permits, and typically shows little variation over time. **Table 2.3** presents average water quality data from these WRPs. All constituents listed have either decreased slightly or remained stable over recent water years. Furthermore, neither TCE nor PCE have been detected above their MCLs in recycled water from these four WRPs over the last four water years.

Recycled water from the West Basin Municipal Water District (WBMWD) WRP undergoes advanced treatment using microfiltration and reverse osmosis, is blended with imported water, and is then injected at the West Coast Basin barrier. This water is treated to meet or exceed drinking water standards and is suitable for direct injection. The blend of recycled water and imported water is injected to prevent the intrusion of salt water and to replenish the groundwater basins. The DHS presently limits injection of recycled water to 50 percent of the total injected amount. However, the WBMWD, working with the DHS and WRD, are seeking to increase the recycled water percentage to 100 percent recycled water in the future. **Table 2.3** presents average water quality data for this injected recycled water.

Quality of Stormwater

As discussed in Section 2.1, stormwater infiltrates to some degree throughout the District. In the Montebello Forebay, it is intentionally diverted from the major storm channels and percolated along with imported and recycled water at local spreading grounds. Periodic

stormwater quality analyses have been performed by LACDPW throughout the history of operations at the Montebello Forebay spreading grounds. Average stormwater quality data are presented on **Table 2.3**. The average TDS, hardness, sulfate, chloride, nitrate, TCE, and PCE concentrations of stormwater in the Montebello Forebay are relatively low.

SECTION 3
GROUNDWATER PRODUCTION AND WATER LEVELS

Groundwater production (pumping) is the major source of groundwater outflow from the CWCB. Groundwater currently provides about 40% of the total water used in the basins. It is critical to maintain adequate supplies of groundwater in storage to meet this demand and to protect against times of drought when imported water may not be available. Measurements of water levels in the basins are performed to check the current supply and are used to determine when artificial replenishment is needed. The remainder of this Section describes WRD's management of groundwater production and water levels in the CWCB.

3.1 GROUNDWATER PRODUCTION IN THE CENTRAL AND WEST COAST BASINS

Prior to the 1960s, groundwater production in the CWCB went relatively unchecked and continued to increase as the population increased. West Coast Basin pumping reached a maximum of 94,100 AF in 1952-53, and Central Basin pumping reached a maximum of 259,400 AF in 1955-56 (DWR, 1962). Pumping exceeded natural recharge, resulting in overdraft, declining water levels, loss of groundwater from storage, and seawater intrusion.

In the early 1960s, the State courts limited the amount of pumping in the CWCB to reduce the overdraft. The West Coast Basin adjudication was finalized in 1961 and capped production at 64,468.25 acre-feet/year (AFY). The Central Basin adjudication rights were set at 271,650 AFY, although the Judgment set a lower Allowed Pumping Allocation (APA) of 217,367 AFY. The total amount that can be pumped from both basins is currently 281,835 AFY.

The adjudicated amounts were set higher than the natural replenishment of the CWCB.

WRD was created in 1959 to manage this deficiency through artificial replenishment. A replenishment assessment is placed on production to collect the funds necessary to purchase the supplemental replenishment water.

During WY 2003-2004, groundwater production in the CWCB was 248,334 AF, of which 200,332 AF occurred in the Central Basin and 47,965 AF occurred in the West Coast Basin. This represents a 2.7% increase from the previous year. The five-year averaged production amount is 248,141 AF (WY 1999-00 through 2003-04). **Table 3.1** presents historical groundwater production quantities for the CWCB. **Figure 3.1** illustrates the levels of production throughout the CWCB during the 2003-2004 Water Year.

Under the terms of the Water Replenishment Districts Act, each groundwater producer in the CWCB must submit a report to the District summarizing their production activities (monthly reports for large producers, quarterly reports for small producers). The information in these reports is the basis from which each producer pays the replenishment assessment. WRD then forwards these production data to the DWR, the court-appointed Watermaster, in connection with the adjudication of the CWCB.

With few exceptions, meters installed and maintained by the individual producers measure groundwater production throughout the basins. Through periodic testing, both WRD and Watermaster verify the accuracy of individual meters and order corrective measures when necessary. The production of the few wells that are not metered is estimated on the basis of electrical energy consumed by individual pump motors, duty of water, or other reasonable means.

WRD's In-Lieu Replenishment Program, which replaces groundwater pumping with the use of imported water to reduce the overdraft of the basins, was suspended in 2003-04 to evaluate its effectiveness. For 2004-05, the Board has approved a limited scale In-Lieu Program of 10,303 AF.

During emergency or drought conditions, WRD can also allow an additional 27,000 AF of extractions (17,000 AF for Central Basin and 10,000 AF for West Coast Basin) for a four-month period. This provision has yet to be exercised but offers the potential use of an additional 7.8% of groundwater for Central Basin and 15% of groundwater for West Coast Basin pumpers.

3.2 GROUNDWATER LEVELS AND CHANGE IN STORAGE

Groundwater levels in the CWCB are tracked by the WRD through the collection of water level measurements in production wells and monitoring wells. Automatic datalogging equipment is installed in selected monitoring wells to collect water levels up to four times per day to capture the daily and seasonal changes in water levels due to local and regional pumping. WRD staff visit these and other monitoring wells at least four times per year to collect manual readings and to download the dataloggers. Staff also obtains records from other agencies such as the pumpers, the DWR, and the LACDPW, who regularly collect water level data from wells. These data are input into WRD's GIS for storage and analysis. Contour maps and hydrographs are prepared to illustrate the current and historical groundwater levels in the basins. The change in groundwater storage is determined based on water level changes over the year.

3.2.1 Contour Maps

Groundwater elevation contour maps show the elevation of the water surface (potentiometric surface) in the aquifer system at a given period of time, typically spring or fall. These maps are used to determine groundwater flow directions and hydraulic gradients, identify areas of recharge and discharge, identify potential pathways for seawater intrusion, and can be used to calculate the changes in water levels and groundwater storage from one year to the next.

WRD has prepared contour maps representing the "Deep Aquifer System", which includes the San Pedro Formation aquifers (Lynwood/400-Foot Gravel, Silverado, and Sunnyside/Lower San Pedro). **Figures 3.2 and 3.3** are groundwater elevation contour

maps for Spring and Fall 2004, respectively. Based on these maps, groundwater levels are highest in the northeastern corner of the Montebello Forebay, where Main San Gabriel Basin groundwater flows into the Central Basin and artificial recharge is performed. Groundwater levels are lowest in several areas, including Long Beach near the city's airport and in the West Coast Basin along the Newport-Inglewood uplift in the City of Gardena. Groundwater flow in the basins moves from recharge or high elevation areas to discharge or low elevation areas. In the Central Basin, groundwater generally moves in a southwesterly direction away from the Montebello Forebay recharge area, and then splits to flow both in a southerly direction toward Long Beach and a westerly direction toward Huntington Park and Los Angeles. In the West Coast Basin, groundwater generally moves in an easterly direction away from the West Coast Basin Barrier Project. The Newport-Inglewood uplift and the Charnock Fault both act as partial barriers to groundwater flow.

In addition to the relatively high summer water demands, MWD's seasonal storage program provides some pumpers with an incentive to pump more groundwater from May through September, and less from October through April. **Figure 3.4** illustrates the monthly pumping amounts for WY 2003-2004. As shown in the figure, pumping in the West Coast Basin does not fluctuate seasonally as much as in the Central Basin. Between October 2003 and April 2004, production in the Central Basin averaged 14,632 AF/month and in the West Coast Basin 3,846 AF/month. However, between May 2004 and September 2004, Central Basin pumping averaged 19,581 AF/month and in the West Coast Basin 4,209 AF/month. The result of this unsteady seasonal pumping causes groundwater levels to vary dramatically from spring to fall, especially in the confined Central Basin aquifers. **Figure 3.5** is a map showing the difference in water levels between Spring and Fall 2004 generally caused by this seasonal pumping. The biggest impact is in the Long Beach area along the Newport-Inglewood Uplift, where Fall water levels are 60 feet to 100 feet lower than Spring water levels.

The change in water levels over the course of the year are shown on **Figure 3.6**, which is a water level change map between Fall 2003 and Fall 2004 for the Silverado Aquifer

(main production aquifer). As shown in the figure, water level changes in the Central Basin ranged from a 30-40 foot drop in the Long Beach area along the Newport-Inglewood Uplift to a 1-5 foot rise in the northwest along the Baldwin Hills. Over most of the Central Basin water levels decreased. The 30-40 foot drop observed in the Long Beach area is attributed primarily to increased groundwater pumping in that area. The 10-20 foot drop observed in the Montebello Forebay is attributed to below normal spreading due to a low rainfall year. In the West Coast Basin water levels increased slightly or did not change significantly. Water levels dropped near the West Coast Barrier because of lower amounts of injection from temporary barrier shutdowns due to telemetry equipment installation and to minimize overinjection. The relative stability in the West Coast Basin is attributed to a well-managed artificial replenishment program via the West Coast Basin Barrier Project and the Dominguez Gap Barrier Project, and that inflows generally equaled outflows in the upper San Pedro Formation aquifers.

3.2.2 Hydrographs

Hydrographs show the changes in water levels in wells over time. WRD uses hydrographs to evaluate basin storage, to determine when to purchase replenishment water, for drought preparedness, and to observe how the basins and aquifers respond to both seasonal and long-term recharge and discharge events.

Figures 3.7 through 3.10 are long-term hydrographs of key wells used in the District's annual Engineering Survey and Report that show water levels dating back to the 1930s and 1940s in the Montebello Forebay, Los Angeles Forebay, Central Basin Pressure Area, and West Coast Basin, respectively. **Figure 3.2** shows the locations of these key wells. The long-term key well hydrographs illustrate the general history of groundwater conditions in the CWCB: 1) Water levels declined steadily in the 1940s and 1950s due to groundwater overdraft, causing seawater intrusion and significant removal of groundwater from storage; 2) The severe overdraft condition led to the adjudication of the CWCB in the early 1960s, and the formation of WRD to purchase and deliver artificial replenishment water for the spreading grounds, seawater barrier wells, and through in-lieu replenishment; 3) Reduction in pumping and artificial replenishment

caused groundwater levels to rise in the CWCB (although not to their historic highs), allowing a return of groundwater to storage; and 4) Through the early to late 1990s, water levels remained relatively stable, but over the past 5 years have declined in the Central Basin. Seasonal variations due to MWD's seasonal storage program have produced water level fluctuations exceeding 100 feet in the confined aquifers between Spring and Fall, such as is illustrated in the Long Beach area **(Figure 3.9)**. In the West Coast Basin, water levels in key wells have increased somewhat over the past 3 years **(Figure 3.10)**.

Annual hydrographs are also used to obtain a more detailed picture of aquifer-specific water level changes over the water year. The data for these annual hydrographs are collected from WRD's nested monitoring wells that were constructed by the USGS. **Figure 1.3** shows the locations of WRD's nested monitoring wells. **Table 3.2** presents the manual groundwater elevation measurements collected from nested monitoring wells during Water Year 2003-2004. **Figures 3.11 through 3.14** are annual hydrographs of selected WRD nested monitoring wells showing data for WY 2003-2004. These data demonstrate the elevation differences between individual aquifers at each nested well location. The differences in elevation are caused primarily by the thickness and hydraulic conductivity of aquitards (if any) that separate the aquifers, the amount and depth of pumping, and the proximity to recharge sources. Information from selected monitoring wells is presented below:

Figure 3.11 – Rio Hondo #1: This nested well is located in the Montebello Forebay in the City of Pico Rivera at the southeast corner of the Rio Hondo spreading grounds. It has six individual wells (zones) screened in the Gardena, Lynwood, Silverado, and Sunnyside (three different zones) aquifers from depths of 160 feet below ground surface (bgs) to 1,130 feet bgs. In WY 2003-2004, water levels in Zone 4, representing the Silverado Aquifer, varied about 27 feet throughout the year, from an elevation high of 70 feet (mean sea level, msl) in March 2004 to an elevation low of about 43 feet (msl) in September 2004. All six zones generally follow the same trend throughout the year, with lows in the fall and highs in the spring, consistent with natural and artificial recharge patterns. With the exceptions of Zones 2 and 3 (both in the Sunnyside aquifer) which

have nearly identical elevation heads throughout the year, there are several feet of vertical head differences between aquifers. Elevation heads are lowest in Zone 4, the Silverado Aquifer, suggesting that this aquifer is the most heavily pumped in the area. Because it has the lowest head, it should be expected to receive recharge waters from aquifers above and below.

Figure 3.12 - Huntington Park #1: This nested well is located in the Los Angeles Forebay in the City of Huntington Park southeast of the intersection of Slauson Avenue and Alameda Street. It has 5 individual wells (zones) screened in the Gaspur, Exposition, Gage, Jefferson, and Silverado Aquifers, from depths of 134 feet bgs to 910 feet bgs. Only 4 zones are shown on the Figure because the shallowest well (screened from 114 feet to 134 feet in the Gaspur Aquifer) is dry, and therefore no water elevations can be shown on the graph. In WY 2003-2004, water levels in Zone 1, representing the Silverado Aquifer, varied about 10 feet throughout the year, from an elevation high of 27 feet below sea level in April 2004 to an elevation low of about 37 feet below sea level during the fall of 2004. Water levels of the deepest 3 zones generally followed the same trend throughout the year, with lows in the late summer and fall and highs in the winter and spring, consistent with natural recharge pattern. Water levels in Zone 4, the Exposition Aquifer, had only relatively minor fluctuations throughout the year, and occur at elevations from 40 to 53 feet higher than the deeper zones, suggesting little interconnectivity with the lower aquifers.

Figure 3.13 - Long Beach #1: This nested well is located in the Central Basin Pressure Area in the City of Long Beach, about a half mile south of the intersection of the 605 Freeway and Willow Street. It has 6 individual wells (zones) screened in the Artesia, Gage, Lynwood, Silverado and Sunnyside (2 zones) Aquifers, with depths ranging from 175 feet bgs to 1,450 feet bgs. In WY 2003-2004, water levels in Zone 3, representing the Silverado Aquifer, varied about 60 feet throughout the year, from an elevation high of about 22 feet below sea level in April 2004 to an elevation low of about 82 feet below sea level in September 2004. The large variation is due to the seasonal pumping patterns and confined aquifer conditions previously discussed. Water levels of the six zones generally

followed the same trend throughout the year, with lows in the late summer and fall and highs in Spring. An abrupt decrease in water levels began in late April to early May as seasonal pumping commenced. A similar rebounding effect is expected in October when pumping is reduced. Elevation head is lowest in Zone 3, the Silverado Aquifer, suggesting that this aquifer is the most heavily pumped in the area. Because Zone 3 has the lowest head, it should be expected to receive recharge waters from aquifers above and below the Silverado.

Figure 3.14 - Carson #1: This nested well is located in the West Coast Basin in the City of Carson, about 1.5 miles northwest of the intersection of the 405 Freeway and Alameda Street. It has 4 individual wells (zones) screened in the Gage, Lynwood, Silverado, and Sunnyside Aquifers from depths of 270 feet bgs to 1,110 feet bgs. In WY 2003-2004, water levels in Zone 2, representing the Silverado Aquifer, varied about 6 feet throughout the year, from a low of about 61 feet below sea level in December 2003 to an elevation high of 55 feet below sea level in August 2004. Water levels in Zones 1 and 2 track very similarly throughout the year, as do Zones 3 and 4. A 31 to 39-foot difference in groundwater elevations between the upper two zones and lower two zones suggests that a significant aquitard exists between them.

3.2.3 Change In Storage

Groundwater enters the CWCB through natural and artificial replenishment, and leaves primarily through pumping. If the amount entering the basin equals the amount leaving, then water levels remain relatively unchanged and the basin is at "steady state". When the amount of groundwater entering exceeds the amount leaving, water levels rise and there is an increase in the amount of groundwater in storage. Conversely, when groundwater leaving the basins exceeds the amount entering, water levels drop and the amount in storage is reduced.

The change in groundwater storage over the course of a water year can be determined by calculating water level changes and multiplying those values by the aquifers' storage coefficients. Water level changes were obtained from WRD's nested monitoring wells,

which have isolated screens in each of the four major aquifer systems in the CWCB (Gaspur, Gage/Gardena, Lynwood/Silverado, and Sunnyside/Lower San Pedro). The water level changes were brought into the GIS and converted into grided surfaces so that they could be multiplied by the storage coefficient values determined by the USGS in their calibrated computer model of the basins (Reichard et al, 2003). Storage changes are relatively small in the deeper confined aquifers because they are fully saturated and storage coefficients are generally small (averaging about 0.0005). The most significant storage change occurs in the forebay areas, which have unconfined conditions with specific yield values from about 0.075 to 0.15. Based on the calculation, approximately 43,000 AF of water was lost from storage in the CWCB during the WY 2003-2004. This was the sixth consecutive year of water level declines and storage loss due to drought. Nearly 200,000 acre-feet have been lost from storage since the 1997-1998 water year. The result of this past water year's loss from storage can be seen on the change in water level map (Figure 3.6). In the forebays, water level decline averaging about 8 feet (Montebello Forebay) and 3 feet (Los Angeles Forebay) were observed.

SECTION 4
GROUNDWATER QUALITY

This section discusses the vertical and horizontal distribution of several key water quality parameters based on data from WRD's monitoring wells for Water Year 2003-2004 and purveyor's production wells for Water Years 2001-2004. Groundwater samples from nested wells were submitted to a DHS certified laboratory for analytical testing for general water quality constituents, known or suspected contaminants, and special interest constituents. Water quality data for production wells were provided by the DHS based on results submitted over the past three years by purveyors for their Title 22 compliance. **Figures 4.1 through 4.32** are maps which present water quality data for key parameters and special interest constituents in the WRD nested monitoring wells and production wells in the CWCB. The figures present the maximum values for data where more than one result is available over the time frame. **Table 1.1** presents well construction information and aquifer designations for WRD wells. **Table 4.1** categorizes groundwater at the WRD wells into major mineral water quality groups. **Table 4.2** lists the water quality analytical results for the wells in the Central Basin during WY 2003-2004. **Table 4.3** lists the water quality analytical results for the wells in the West Coast Basin during WY 2003-2004.

4.1 MAJOR MINERAL CHARACTERISTICS OF GROUNDWATER IN THE CENTRAL AND WEST COAST BASINS

Major minerals data obtained from laboratory analyses were used to characterize groundwater from discrete vertical zones of each WRD well (**Table 4.1**). Research by the USGS has provided three distinct groupings of groundwater compositions. Group A groundwater is typically calcium bicarbonate or calcium bicarbonate/sulfate dominant. Group B groundwater has a typically calcium-sodium bicarbonate or sodium bicarbonate character. Group C has a sodium chloride character. A few of the WRD wells yield groundwater samples which do not fall into one of the three major groups and are grouped separately.

Groundwater from Group A likely represents recent recharge water containing a significant percentage of imported water. Groundwater from Group B represents older native groundwater replenished by natural local recharge. Groundwater from Group C represents groundwater impacted by seawater intrusion or connate saline brines. **Table 4.1** lists the groundwater group for each WRD nested monitoring well sampled during WY 2003-2004. Comparison of groundwater groups with well locations indicates that, in general, Group A groundwater is found at and immediately down-gradient from the Montebello Forebay spreading grounds in all but the deepest zones. Group B groundwater is found farther down the flow path of the Central Basin and inland of the salt water wedge and injected water in the West Coast Basin. Group C water is generally found near the coastlines. Several wells, grouped as "Other" on **Table 4.1**, exhibit a chemical character range different from Group A, B, and C ranges and represent unique waters not characteristic of the dominant flow systems in the basins. The USGS is currently conducting trace element isotope analyses of water from these wells to identify their hydrogeologic source(s).

The major mineral compositions of water from the WRD nested monitoring wells sampled this water year have not changed substantially from previous years. It is expected that continued analysis will show gradual changes in major mineral compositions over time, as older native water is extracted from the basins and replaced by younger artificially replenished water.

4.2 TOTAL DISSOLVED SOLIDS (TDS)

As described in Section 2.3, TDS is a measure of the total mineralization of water. It represents the overall mineral content of the water and usually is the first indicator used in assessing the quality of the water. The State DHS has established a recommended secondary standard of 500 mg/L and an upper limit of 1,000 mg/L for short-term use. Exceeding the upper limit is not considered a health hazard, but high TDS levels can impart a salty taste.

WRD nested monitoring well data for WY 2003-2004 indicate relatively low TDS concentrations for groundwater in the deeper producing aquifers of the Central Basin (**Figure 4.1**). TDS concentrations in the Central Basin ranged from 170 mg/L in Lakewood #1 zone 1, to 2,800 mg/L in Whittier #1 zone 1. In the Central Basin, Silverado Aquifer zones in 16 out of 21 WRD nested monitoring wells had very low TDS concentrations, below 500 mg/L. The Silverado aquifer zones in all 21 Central Basin wells tested contained less than the DHS upper limit for TDS of 1,000 mg/L. Generally, TDS concentrations above 1000 mg/L were limited to localized very deep or very shallow zones of Whittier #1, Inglewood #2, Long Beach #1, Long Beach #2, and Montebello #1.

In contrast, West Coast Basin nested monitoring well data show generally higher TDS concentrations. TDS in WRD nested monitoring wells in the West Coast Basin ranged from 200 mg/L in Carson #1 zone 1, to 12,000 mg/L in PM-4 Mariner zone 2. Only the most inland nested monitoring wells, Carson #1, Carson #2, Gardena #1, and Gardena #2 indicate TDS values below 500 mg/L consistently for all zones below the shallowest. Wilmington #1 and Wilmington #2, located near the Dominguez Gap Seawater Intrusion Barrier have significantly high TDS values, each with elevated TDS in multiple zones, including Silverado aquifer zones. Many zones of the Inglewood #1, Long Beach #8, and Lomita # 1 nested monitoring wells exceed 750 mg/L with one or more zones greater than 1,000 mg/L.

Figure 4.2 presents DHS water quality data for TDS in production wells across the CWCB during WYs 2001-2004. In the Central Basin, TDS generally ranged between 250 and 750 mg/L over most of the basin. In a localized area along the San Gabriel River in the general vicinity of and downgradient of the Rio Hondo and San Gabriel River spreading grounds, many wells had TDS concentrations between 500 and 750 mg/L. A few wells in this area contained TDS in excess of 750 mg/L. Data from many of the production wells in the southernmost portion of the Central Basin indicated TDS less than 250 mg/L.

Data from West Coast Basin wells indicate that most wells in production had TDS concentrations below 750 mg/L. Several production wells located close to the coast in the Hawthorne/Torrance areas had TDS concentrations above 750 mg/L.

4.3 IRON

Iron and manganese in general are not harmful for ingestion. They are essential nutrients. However, secondary standards of 0.3 mg/L for iron and 50 µg/L for manganese were established for aesthetic purposes. If completely oxidized, they are relatively insoluble in groundwater as Fe^{+3} and Mn^{+4}. However, under anaerobic conditions, these constituents exist in the reduced forms of Fe^{+2} and Mn^{+2} which are more soluble in water. Upon exposure to air the reduced ions can slowly oxidize and form undesirable precipitates that discolor the water, plumbing fixtures, and clothes. Iron can cause encrustation in pipes and boilers and also impart a metallic taste to the water.

Dissolved iron in groundwater has historically been a water quality problem in portions of the CWCB. An abundant source of iron is present in the minerals making up the aquifers of the basins. The presence of dissolved iron (that is, iron dissolving from minerals into the groundwater) is controlled by a variety of geochemical factors discussed at the end of this section. In the Central Basin, iron in nested monitoring wells (**Figure 4.3**) ranged from less than the detection limit (numerous wells) to 0.6 mg/L (Inglewood #2, zone 1). Iron was detected below the MCL in Silverado zones of 15 out of 21 nested wells. In zones above and below the Silverado, iron was detected below the MCL in 19 out of the 21 Central Basin wells. Iron was detected above the MCL in only one Silverado zone (Pico #1, zone 3), and in only two wells above or below the Silverado (Inglewood #2, zones 1 and 2; and Whittier #1, zones 1 and 2).

In the West Coast Basin elevated iron occurs locally. Iron concentrations ranged from less than the detection limit (numerous wells) to 1.1 mg/L (Inglewood #1, zone 1). Iron is generally detected in most zones at all 15 well locations at concentrations below the MCL. One well in the West Coast Basin had an iron concentration in the Silverado exceeding the MCL (Inglewood #1, zone 1). One other well, PM-3 Madrid zone 4 had an

iron concentration above the MCL in a zone above the Silverado.

Figure 4.4 presents DHS water quality data for iron in production wells across the CWCB during WYs 2001-2004. The data show elevated iron concentrations in many production wells throughout the CWCB and many purveyors opt to treat groundwater to remove the iron. There does not appear to be a distinct pattern to the occurrence of elevated iron. Production wells exhibiting high iron concentrations appear in and around many with non-detectable iron.

Data from DHS for the West Coast Basin indicate roughly one-third of production wells in the northwestern portion of the Basin have iron concentrations exceeding the secondary MCL. As in the Central Basin, there does not appear to be a distinct pattern to the occurrence of iron in the basins.

Although a definitive source cannot be identified for the various elevated iron concentrations described above, some general geochemical relationships for dissolved iron in groundwater may apply to the iron distribution patterns. First, dissolved iron tends to form under reducing groundwater conditions. Groundwater having a pH value between 6 and 8 can be sufficiently reducing to retain as much as 50 mg/L of dissolved ferrous iron at equilibrium, when bicarbonate activity does not exceed 61 mg/L (Hem, 1992). Second, iron is a common component of many igneous rocks and is found in trace amounts in virtually all sediments and sedimentary rocks—therefore, abundant natural sources of dissolved iron are present throughout the CWCB and under specific geochemical conditions, the natural iron in the sediments can dissolve into the groundwater. Third, water may dissolve any subsurface iron casing, piping, etc. (the main materials of older production wells and pumps, and distribution systems), thus production wells themselves may contribute iron to water supplies.

4.4 MANGANESE

Manganese concentrations in the WRD nested monitoring wells exhibit widespread vertical and horizontal variations across the CWCB. Like iron, manganese is a naturally

occurring element in aquifer materials and groundwater. In the Central Basin (**Figure 4.5**), manganese ranges from below the detection limit (numerous wells) to 670 µg/L (Pico #2 zone 6). In the southern portion of the basin, elevated manganese typically occurs in shallower aquifers above the Silverado producing zones. In the northern portion of the Central Basin, manganese is present in shallow zones, the Silverado Aquifer, and the deeper zones.

In the West Coast Basin, manganese concentrations in nested monitoring wells ranged from below the detection limit (numerous wells) up to 1,200 µg/L (PM-4 Mariner zone 2). In the southern portion of the West Coast Basin, like iron, elevated manganese concentrations were limited to aquifer zones above the Silverado. In the western and northern portions of the West Coast Basin, manganese concentrations typically exceed the MCL in most zones with only a few zones containing manganese below the MCL.

Figure 4.6 presents DHS water quality data for manganese in production wells across the CWCB during WYs 2001-2004. The data show a large number of wells having elevated manganese concentrations with approximately one-third exceeding the MCL. The production wells with elevated manganese tend to be widespread, but there does appear to be an area in the vicinity and extending about five miles downgradient of the Montebello Forebay spreading grounds where manganese is consistently below the MCL. In the West Coast Basin, production wells with high concentrations of manganese tend to be somewhat clustered in the western portion of the basin.

4.5 NITRATE

Nitrate concentrations in groundwater are a concern because their presence indicates that a degree of contamination has occurred due to the degradation of organic matter. Native groundwater typically does not contain nitrate. It is usually introduced into groundwater from agricultural practices such as fertilizing crops and leaching of animal wastes, and is also formed when recycled water is percolated through the soil during recharge. Typically, organic nitrogen and ammonia are the initial byproducts of the decomposition

of human or animal wastes. Upon oxidation the organic nitrogen and ammonia are converted first to nitrite and then nitrate ions in the subsurface. A portion of the nitrite and nitrate are converted to nitrogen gas and hence are returned to the atmosphere. Nitrate itself is not harmful; however, it can be converted back to nitrite. If infants injest nitrite, methemoglobinemia, a condition in which hemoglobin in the blood cannot transport oxygen throughout the body may result. Methemoglobinemia results in a lack of oxygen, causing lethargy, shortness of breath, and a bluish skin color. Under extreme cases, this condition can be fatal. To safeguard public health, the DHS has a standard of 10 mg/L as nitrogen for nitrate, 1 mg/L as nitrogen for nitrite, and 10 mg/L as nitrogen for the total of nitrite and nitrate.

Figure 4.7 presents nitrate (as nitrogen) water quality data for nested monitoring wells in the CWCB during WY 2003-2004. In the Central Basin, nitrate (as nitrogen) concentrations ranged from below the detection limit (numerous wells) to 14 mg/L (Los Angeles #1 zone 5). Nested monitoring wells in the vicinity of the Montebello Forebay spreading grounds indicate concentrations of nitrate slightly above detection limits but below the MCL. Rio Hondo #1 and Pico #2 show detectable concentrations of nitrate from the shallowest zones down to Zones 3 and 1 respectively. South Gate #1, Downey #1, and Cerritos #2 show detectable concentrations in one or more of the middle zones, which are directly down the flow path from the spreading grounds, however Silverado and deeper zones of nested wells more distant from the spreading grounds have no detectable concentrations of nitrate. The detectable but relatively low concentrations of nitrate at and near the spreading grounds may be due to the local water and/or recycled water component of recharge at the spreading grounds. Nitrate is also observed in shallow zones at Huntington Park #1, Commerce #1, Montebello #1, Pico #1, Whittier #1, and La Mirada #1. These shallow occurrences of nitrate, away from the spreading grounds, are likely attributed to local surface recharge from former agricultural activities prior to the extensive land development that began in the 1950s.

In the West Coast Basin nested monitoring wells, nitrate concentrations ranged from below the detection limit (numerous wells) to 12 mg/L (Gardena #1). Concentrations

exceeding the nitrate MCL included the shallowest zone of Inglewood #1 and Gardena #1. A detection below the MCL in the shallowest zone at Hawthorne #1 was observed. As in the Central Basin, shallow zone occurrences of nitrate with deeper zones below detection limits are likely attributable to local surface recharge from former agricultural activities prior to the extensive land development that began in the 1950s.

Figure 4.8 presents DHS water quality data for nitrate in production wells across the CWCB during WYs 2001-2004. The nitrate MCL was not exceeded in any of the wells in the CWCB during the 2001-2004 period. Detectable concentrations below the MCL were generally located in the vicinity and downgradient of the San Gabriel River and Rio Hondo spreading grounds of the Montebello Forebay, and in several scattered locations in the northwestern portion of the Central Basin. Production wells in the southern portion of the Central Basin and all of the West Coast Basin show relatively low nitrate concentrations below 3 mg/L.

4.6 HARDNESS

Figure 4.9 presents water quality data for total hardness in WRD nested monitoring wells in the CWCB during WY 2003-2004. In the Central Basin total hardness ranged from 6.86 (Long Beach 1 zone 2) to 1,080 mg/L (Whittier #1 zone 1), while in the West Coast Basin, hardness ranged from 7.06 mg/L (Carson #2 zone 3) to 5,560 mg/L (PM-4 Mariner zone 2). In general, the deeper aquifers characterized as having older native groundwater in the southern portion of the Central Basin and locally in the West Coast Basin show low total hardness. Most other zones in both basins have moderate to high hardness.

Figure 4.10 presents DHS water quality data for total hardness in production wells in the CWCB during WYs 2001-2004. Groundwater in the West Coast Basin has moderate hardness. Production wells in the southern and western portions of the Central Basin show groundwater with low to moderate hardness. In the northern portion of the Central Basin, production wells show groundwater with generally moderate to high hardness.

4.7 SULFATE

Figure 4.11 presents water quality data for sulfate in WRD nested monitoring wells in the CWCB during WY 2003-2004. In the Central Basin sulfate ranged from below the detection limit (numerous wells) to 1,400 mg/L (Whittier #1 zone 1), while in the West Coast Basin sulfate ranged from below the detection limit (numerous wells) to 710 mg/L (PM-4 Mariner zone 2). In general the data indicate that the lowest sulfate concentrations are found in most of the deeper zones of the West Coast Basin and southern portion of the Central Basin. Again, these are areas characterized in previous sections as having characteristics representative of older native groundwater. The uppermost one or two zones in many of these wells typically show elevated sulfate concentrations, likely due to local surface recharge. In the northeast portion of the Central Basin, higher sulfate concentrations are observed in most zones primarily due to the relatively high sulfate in imported Colorado River water. Results show that Silverado zones at only two nested monitoring wells are impacted by sulfate greater than the MCL. These wells include Whittier #1, in an area of generally poor water quality, and PM-4 Mariner, which is impacted by sea water intrusion in the West Coast Basin.

Figure 4.12 presents DHS water quality data for sulfate in production wells in the CWCB during WYs 2001-2004. The production well data indicate patterns of sulfate concentrations similar to those observed in the deeper zones of WRD nested monitoring wells. Sulfate concentrations are generally low in the central and eastern areas of the West Coast Basin and southern portion of the Central Basin, and somewhat higher along the western margin of the West Coast Basin and in the northern portion of the Central Basin.

4.8 CHLORIDE

Figure 4.13 presents water quality data for chloride in WRD nested monitoring wells in the CWCB during WY 2003-2004. In the Central Basin, chloride concentrations ranged from 4.7 mg/L (Downey #1 zone 1) to 730 mg/L (Montebello #1 zone 1). The Silverado aquifer zones of the Central Basin nested monitoring wells contain low to very low chloride concentrations, all below 250 mg/L. In the West Coast Basin, chloride ranged

from 12 (Gardena #2 zone 1) to 6,300 mg/L (PM-4 Mariner zone 2). Chloride concentrations exceeded the MCL in the Silverado aquifer zones in five of the fifteen West Coast Basin nested wells, primarily due to seawater intrusion (Long Beach #8, Long Beach #3, Wilmington #1, Wilmington #2, and PM-4 Mariner) or from sources yet to be identified.

Figure 4.14 presents DHS water quality data for chloride in production wells in the CWCB during WYs 2001-2004. Chloride was not detected above its MCL in any of the Central Basin production wells. In the southern portion of the Central Basin, chloride concentrations in production wells were generally below 50 mg/L; while in the northeastern portion of the Central Basin, concentrations ranged from 50 to 100 mg/L. In the West Coast Basin, available DHS data indicate that isolated production wells on the west side of the Basin had chloride concentrations above the MCL.

4.9 TRICHLOROETHYLENE (TCE)

TCE is a commonly used solvent for metal cleaning, dry cleaning of fabrics, and textile processing. It is classified as a probable human carcinogen. Its presence in groundwater likely originated from improper disposal practices. The MCL for TCE is 5 µg/L. If present in water, it can be removed easily either by packed tower aeration or granular activated carbon treatment.

TCE was detected in five WRD nested monitoring well locations in the Central Basin and in three nested well locations in the West Coast Basin (**Figure 4.15**). In the Central Basin, TCE concentrations, ranged from below the detection limit (numerous wells) to 31 µg/L (Los Angeles #1 zone 5). Only one nested well location, South Gate #1, contained a detectable TCE concentration in the Silverado Aquifer, but that concentration was below the MCL. Four other locations (Los Angeles #1 zone 4, Huntington Park #1 zones 3 and 4, Commerce #1 Zone 5, and Downey #1 zones 5 and 6) had detections of TCE in zones above the Silverado Aquifer. The detections in Los Angeles #1 zones 4 and 5, and Huntington Park #1 Zone 3 were above the MCL.

In the West Coast Basin, TCE concentrations ranged from below the detection limit (numerous wells) to 17 µg/L (Hawthorne #1 zone 6). In the shallowest zone and deepest zone of Inglewood #1, and the shallowest zone of Hawthorne #1, TCE concentrations above the MCL were detected. In the shallowest zone at PM-3 Madrid, TCE was detected below the MCL. TCE was not detected in the Silverado zones in any of the nested monitoring wells in the West Coast Basin.

Figure 4.16 presents DHS water quality data for TCE in production wells across the CWCB during WYs 2001-2004. Over 300 wells were tested for TCE. The data show that over the past three years TCE has been detected in 61 production wells in the Central Basin. Fourteen detections were above the MCL. All of the wells with concentrations above the MCL were in the vicinity of the Montebello and Los Angeles Forebay areas. In the West Coast Basin TCE was not detected in any production wells.

4.10 TETRACHLOROETHYLENE (PCE)

Tetrachloroethylene, also known as perchloroethylene or perk, is a solvent used in dry cleaning, textile processing, and metal degreasing. It is also used in the manufacture of fluorocarbons and as a septic tank cleaner. Through improper disposal practices, it has contaminated many groundwater basins. It is a probable human carcinogen. The MCL for PCE is 5 µg/L. Like TCE, PCE is easily removed using packed tower aeration or granular activated carbon treatment.

During WY 2003-2004, PCE (**Figure 4.17**) was detected at eight nested well locations in the Central Basin and one well in the West Coast Basin. In the Central Basin, PCE ranged from below the detection limit (numerous wells) to 11 µg/L (South Gate #1 zone 4), all from nested wells within or near the vicinity of the Montebello and Los Angeles forebays. At well South Gate #1, PCE was detected above the MCL in the Silverado Aquifer. At Downey #1 and Cerritos #2, PCE was detected below the MCL in the Silverado Aquifer. South Gate #1 shows PCE detected below the MCL in a zone below the Silverado Aquifer. At Huntington Park #1, PCE was detected below the MCL in zones 3 and 4, above the Silverado Aquifer. At Los Angeles #1, PCE was detected below

the MCL in the two shallowest zones, both above the Silverado aquifer. At Montebello #1, PCE below the MCL was detected in zone 5 above the Silverado. At Pico #2, PCE was detected in 3 zones below the Silverado aquifer; above the MCL in zone 3 and below the MCL in zones 1 and 2.

In the West Coast Basin, PCE concentrations were below the detection limit in all nested monitoring wells except Inglewood #1. The shallowest zone at Inglewood #1 had 1.5 µg/L of PCE which is below the MCL. The deepest zone, below the Silverado aquifer, at Inglewood #1 also contained PCE below the MCL.

Figure 4.18 presents DHS water quality data for PCE in production wells across the CWCB during WYs 2001-2004. In the Central Basin, PCE was detected in 65 production wells. Eleven of the 65 wells exceeded the MCL for PCE. Production wells with detectable PCE are primarily located within the vicinity of the Los Angeles and Montebello Forebays and extend out into the west-central portion of the Central Basin. PCE was not detected in production wells in the southern portion of the Central Basin. PCE was not detected in any production wells tested in the West Coast Basin during WYs 2001-2004.

4.11 SPECIAL INTEREST CONSTITUENTS

Several additional water quality constituents have been monitored and studied by WRD to address emerging water quality issues related to hazardous waste contamination, recycled water use in the CWCB, and proposed revisions to water quality regulations. Current special interest constituents include arsenic, chromium, MTBE, total organic carbon (TOC), apparent color, and perchlorate. Studies have included focused sampling of WRD nested monitoring wells and evaluation of DHS Title 22 Program data for the special interest constituents. The following subsections present the data collected for each of these constituents.

4.11.1 Arsenic

The Safe Drinking Water Act, as amended in 1996, requires the United States Environmental Protection Agency (EPA) to revise the existing drinking water standard for arsenic, which they have done. The DHS is required to establish a standard equal to or more stringent than the EPA standard. In establishing the new statewide standard, the DHS will consider not only possible adverse health effects from exposure to this constituent but also, as required by statute, technical, and economic feasibility. Studies have shown that treatment to remove arsenic to acceptable levels is technically feasible. However, the arsenic then becomes a potential hazardous waste. It is uncertain if arsenic residuals can be properly disposed of at acceptable costs.

EPA announced on October 31, 2001 that the arsenic standard will remain at 10 μg/L, as was originally announced on January 21, 2001. Three expert panel reviews were conducted on the health effects of arsenic, costs for compliance, and benefits associated with varying degrees of treatment, and were considered before EPA's announcement. The current State standard is 50 μg/L. Because costs for small systems will be significant, EPA has indicated that they will provide assistance in funding and training, as well as research, to find new treatment technologies that will reduce costs of compliance. The date for compliance for all water systems is January 2006.

Health and Safety code Section 116361 requires the DHS to adopt a new arsenic MCL by June 30, 2004 and required the Office of Environmental Health Hazard Assessment (OEHHA) to establish a new Public Health Goal (PHG) by December 31, 2002. Also, new language concerning the health effects of ingesting water with arsenic is required in Consumer Confidence Reports as of July 1, 2003. OEHHA announced the final PHG of 0.004 μg /L in April 2004. As part of the regulatory process, DHS is required to establish an MCL at a level as close as is technically and economically feasible to the PHG.

Arsenic is an element that occurs naturally in the earth's crust. Accordingly, there are natural sources of exposure. Natural sources of arsenic include weathering and erosion of rocks, deposition of arsenic in water bodies, and uptake of the metal by animals and

plants. Consumption of food and water are the major sources of arsenic exposure for the majority of U.S. citizens. Over ninety percent of commercial arsenic is used as wood preservative in the form of chromate copper arsenate to prevent dry rot, fungi, molds, termites, and other pests. People may also be exposed from industrial applications, such as semiconductor manufacturing, petroleum refining, animal feed additives and herbicides. Arsenic is carcinogenic and also causes other health effects such as high blood pressure and diabetes.

Figure 4.19 presents arsenic water quality data for WRD nested monitoring wells during WY 2003-2004. In the Central Basin arsenic concentrations ranged from non-detectable (numerous wells) to 51 µg/L in the shallowest zone at Norwalk #1 zone 3. Arsenic concentrations greater than the pending MCL in the Central Basin were found at seven wells, Willowbrook #1, Compton #1, Pico #2, Lakewood #1, Cerritos #1, Cerritos #2, and Norwalk #1. Arsenic concentrations exceeding the pending MCL in the Silverado aquifer zones were found only at Cerritos #1 and Cerritos #2, located in the eastern portion of the District. Overall the distribution of arsenic appears to be similar to the distribution of iron and manganese in the Central Basin with generally lower concentrations near the Forebays and higher concentrations down the flow paths away from the Montebello Forebay spreading basins.

In the West Coast Basin only zone 2 at PM-4 Mariner had an arsenic concentration above the pending MCL in the Silverado Aquifer. The deepest zones in Gardena #1 and Inglewood #1, below the Silverado Aquifer, had a concentrations of arsenic above the pending MCL of 10 µg/L. Arsenic concentration above the current MCL was observed at the shallowest zone at Wilmington #2.

Figure 4.20 presents DHS water quality data for arsenic in production wells across the CWCB during WYs 2001-2004. Eight production wells in the central and southeastern portion of the Central Basin contained arsenic concentrations above the pending MCL. Many other production wells at various locations in the Central Basin contained arsenic at concentrations between 5 and 10 µg/L. Arsenic was not detected in any of the West

Coast Basin production wells during WYs 2001- 2004.

4.11.2 Chromium

Chromium is a metal used in the manufacture of stainless steel, metal plating operations, and other applications. Chromium has the potential to contaminate groundwater from spills and leaking tanks. It comes in two basic forms: chromium 3 (trivalent) and chromium 6 (hexavalent) ions. Chromium 3 is a basic nutrient that is quite commonly ingested by adults in doses of 50 to 200 µg/day. Chromium 6 is an oxidized form of chromium 3 that is a known carcinogen when inhaled. This is based on occupational exposures in chromium plating and other related industries. It is unclear if ingestion of chromium 6 is harmful. The reduction of chromium 6 to chromium 3 that occurs from gastric juices during digestion is a key factor in determining the level of carcinogenicity of ingested chromium 6.

Currently the MCL for total (all forms of) chromium is 50 µg/L. In February 1999, OEHHA established a Public Health Goal for total chromium at 2.5 µg/L, based on a health protective level for chromium 6 at 0.2 µg/L and the assumption that 7 percent of total chromium in drinking water is chromium 6. In November 2001, OEHHA announced that it rescinded this PHG. At their request earlier this year, a scientific panel convened by the University of California, known as the Chromate Toxicity Review Committee, reviewed the study that OEHHA originally used as a basis for their PHG and concluded in September 2001 that the data were flawed and should not be used for health risk assessment. At the request of both DHS and OEHHA, the National Toxicity Program of the National Institute of Environmental Health Sciences will perform a long-term health effects study on rodents to evaluate the potential carcinogenicity of ingested chromium 6. It is expected to be completed in 2005. DHS has added chromium 6 to its list of Unregulated Chemicals Requiring Monitoring (UCRM) in production wells.

Health and Safety Code Section 116365.5 required DHS to adopt a chromium 6 MCL by January 1, 2004. However, OEHHA has not yet issued a new draft chromium 6 PHG.

Figure 4.21 presents total chromium water quality data for WRD nested monitoring wells. In the Central Basin, only the uppermost zone in the Los Angeles #1 nested well exceeded the MCL of 50 µg/L for total chromium. Trace levels of total chromium were detected in one or more zones of all other Central Basin nested wells. Total chromium was not detected above the MCL in the West Coast Basin. As in the Central Basin, trace levels of total chromium were detected in one or more zones of numerous other nested wells in the West Coast Basin.

Figure 4.22 presents DHS water quality data for total chromium in production wells across the CWCB during WYs 2001-2004. No production wells in the Central Basin exceeded the MCL for total chromium. Fifteen production wells in the Central Basin contained total chromium below the MCL. In the majority of production wells sampled in the Central Basin, total chromium was not detected. Total chromium was not detected in any of the production wells tested in the West Coast Basin.

Figure 4.23 presents hexavalent chromium water quality data for WRD nested monitoring wells. Most WRD nested monitoring wells have been sampled twice for hexavalent chromium since early 1998. Most zones contained hexavalent chromium below the Preliminary Health Goal of 0.2 µg/L. However, in the northern portion of the Central Basin, hexavalent chromium was detected at concentrations ranging from 0.2 to 30 µg/L. All of the detected concentrations were below the current MCL for total chromium. In the Los Angeles #1, Huntington Park #1, Commerce #1, Downey #1, Rio Hondo #1, Pico #1, and Whittier #1 wells, hexavalent chromium was detected in zones above the Silverado Aquifer. In Los Angeles #1, South Gate #1, Downey #1, Rio Hondo #1, Pico #2, Cerritos #2, Norwalk #1, Long Beach #1, Long Beach #2, and Long Beach #6, hexavalent chromium was detected in zones within and/or below the Silverado Aquifer. In the West Coast Basin, hexavalent chromium was detected below the MCL for total chromium in the shallowest zones of Inglewood #1, Gardena #1, and Chandler #3. Hexavalent chromium below the MCL was detected in the lowest zones at Westchester #1, Long Beach #3, and Long Beach #8.

As new wells are added to the WRD nested monitoring well network, samples will be collected for hexavalent chromium analysis to update the special study results. WRD will report these updates in subsequent Regional Groundwater Monitoring Reports.

Figure 4.24 presents WYs 2001-2004 DHS water quality data for hexavalent chromium in production wells across the CWCB during 2001-2004. Hexavalent chromium results have been reported in over 100 production wells in the Central Basin and West Coast Basins. Detections of hexavalent chromium were observed in 29 Central Basin wells, all below the MCL for total chromium Hexavalent chromium was not detected in any of the West Coast Basin production wells.

4.11.3 Methyl Tert-Butyl Ether (MTBE)

Methyl tert(iary) butyl ether (MTBE) is a synthetic chemical added to gasoline to improve air quality as required by the Federal Clean Air Act. Limited quantities have been used in gasoline in California since the 1970s. In 1992, oil companies began using it extensively in California to meet reformulated gas requirements of the State Air Resources Board. Its use enables gasoline to burn more completely. However, MTBE has been detected in groundwater and surface water throughout California from sources including leaking underground storage tanks, pipelines, and spills; and from emissions of boat engines into lakes and reservoirs. Animal tests have shown MTBE to be carcinogenic. Effective May 17, 2000, a primary MCL of 13 µg/L was established by DHS. A secondary standard of 5 µg/L was established in response to taste and odor concerns. Effective Janaury 1, 2004, the use of MTBE is banned. The most likely substitute for MTBE is ethanol. The production and distribution of ethanol, however, is problematic. There may not be an adequate supply source, and it cannot be delivered through pipelines. The State requested a waiver from the USEPA for oxygenates, and was denied. The State has filed suit requesting EPA to reconsider. On January 29, 2004, Governor Schwarzenegger submitted to USEPA another request for a waiver from oxygenate requirements.

Figure 4.25 presents MTBE water quality data for WRD nested monitoring wells during

WY 2003-2004. MTBE was not detected in any of the WRD nested monitoring wells. MTBE will be watched closely in the future in WRD nested monitoring wells.

Figure 4.26 presents DHS water quality data for MTBE in production wells across the CWCB during WYs 2001-2004. In the Central Basin, MTBE was detected in three production wells in the Montebello Forebay area. All three wells are in close proximity to each other and have not exceeded the MCL. MTBE was not detected in any West Coast Basin production wells during the reporting period.

4.11.4 Total Organic Carbon

Total organic carbon (TOC) is the broadest measure of the concentration of organic molecules in water and is of interest because it gives an indication of the potential formation of disinfectant byproducts, some of which are harmful. TOC can be naturally occurring, result from domestic and commercial activities, or can be a product of wastewater treatment processes. While there is no MCL established for TOC, regulators are generally concerned with TOC of wastewater origin as a measurable component of recycled water. Typically, wastewater that has been subjected to effective secondary treatment contains 5 to 15 mg/L of TOC. Advanced treatment can effectively lower the TOC concentration to less than 1 mg/L. Likewise, percolating water through the soil has also been proven to be an effective method in reducing TOC in reclaimed water. Studies indicate that the TOC measured in groundwater samples in both nested monitoring wells and production wells in the CWCB is naturally occurring in the aquifer systems and was derived from organic material and decaying vegetation either deposited with the aquifer sediments as the basins were filling or originally contained in imported water (AWWA, 2001).

Figure 4.27 presents TOC water quality data for WRD nested monitoring wells during WY 2003-2004. In the Central Basin, TOC was detected in multiple zones of 19 of the 21 nested monitoring wells. Only La Mirada #1 contained no detectable TOC in any zone. Where TOC is present, concentrations are typically below 1 mg/L and less frequently between 1 and 5 mg/L. The lower concentrations occur in the shallow and

middle zones of the nested wells; higher concentrations of TOC are generally found in the deeper zones. Only four wells in the Central Basin have zones with TOC greater than 5 mg/L; including the four deepest zones at Long Beach #6, the deepest zone at Long Beach #2, the deepest two zones at Inglewood #2, and the deepest two zones sampled at Montebello #1. The deeper wells with TOC greater than 5 mg/L are likely to contain naturally occurring organic carbon, and not wastewater related organic carbon. In the West Coast Basin, TOC greater than 1 mg/L is present in one or more zones at all 15 nested monitoring wells tested, and at concentrations greater than 5 mg/L in one or more zones at seven of the 15 West Coast Basin production wells tested.

Figure 4.28 presents limited DHS water quality data for TOC in production wells across the CWCB during WYs 2001-2004. During the three-year period only 38 wells were tested for TOC. Only six of the 38 wells tested below the detection limit for TOC. Most of the wells contained TOC at concentrations ranging from 1 to 5 mg/L and most were located near the Montebello Forebay spreading basins or in the southern Central Basin (City of Long Beach).

4.11.5 Apparent Color

Apparent color in groundwater (colored groundwater) is not toxic or harmful; an MCL of 15 apparent color units (ACUs) has been established as an aesthetic standard. Colored groundwater results from colloidal organic particles suspended in the water that display colors ranging from pale yellow to a dark tea brown. There is an observed relationship between apparent color and TOC, especially in the higher concentration range. Colored groundwater can be effectively treated and served, however treatment is relatively expensive.

Figure 4.29 presents apparent color water quality data for WRD nested monitoring wells in the CWCB during WY 2003-2004. Apparent color is present above the MCL in the deepest zones of seventeen nested monitoring wells. One other well has apparent color above the MCL in intermediate zones. Apparent color does not exceed the MCL in the uppermost zone in any nested monitoring wells tested. This relationship between

apparent color and depth, along with the relationship between color and TOC, is probably due to an increase in the content of natural organic matter in the deeper sediments of the basins.

Figure 4.30 presents DHS water quality data for apparent color in production wells across the CWCB during WYs 2001-2004. These data indicate that colored groundwater is not a widespread problem in the basins. Most production wells tested below the MCL. Locally in the Long Beach, Inglewood, La Mirada/Norwalk, Pico Rivera and Los Angeles areas, several wells did test above the MCL for apparent color; some water purveyors in those areas have treatment systems operating to remove color from the groundwater.

4.11.6 Perchlorate

Perchlorate is the primary ingredient in rockets, missiles, road flares, and fireworks. It also has widespread use in air bag inflators, electronics, electroplating, lubricating oils, and the production of paints and enamels. Studies show that perchlorate can impact the proper functioning of the thyroid gland by inhibiting the uptake of iodide, and can cause a decrease in the production of hormones necessary for normal growth, development, and metabolism.

DHS established an action level of 18 µg/L in 1997, but revised it to 4 µg/L on January 18, 2002 based on the results of more current studies. OEHHA proposed a draft PHG of 2 to 6 µg/L in December 2002. On March 12, 2004, OEHHA issued a final PHG of 6 ug/L. DHS also revised the action level to 6 µg/L. Effective January 1, 2005, this is now referenced as the a notification level. Health and Safety Code Section 116275 required DHS to adopt a MCL for perchlorate by January 1, 2004. DHS's MCL will be based on the final PHG with consideration given to technical and economic feasibility. A factor in the potential revision of the final PHG is an ongoing review by the National Academy of Sciences on adverse health effects of perchlorate, which was scheduled for completion in late 2004. OEHHA has indicated that they will consider revising the PHG if there are conflicts. DHS anticipates proposing a draft MCL in 2005.

Figure 4.31 presents perchlorate water quality data for WRD nested monitoring wells in the CWCB during 1998-2004. The longer time period was used because perchlorate is only tested the first two sampling events at a new nested monitoring well and not tested twice per year as are most other constituents in this report. Perchlorate has been detected above the SAL in two Central Basin nested monitoring wells. At Huntington Park #1, perchlorate was detected above the SAL above the Silverado Aquifer. At Downey #1, perchlorate was detected above the SAL within the Silverado Aquifer. Perchlorate is present below the SAL in three other Central Basin nested monitoring wells including Commerce #1, South Gate #1, and Los Angeles #1. In the West Coast Basin, perchlorate was detected below the SAL at three wells; the shallowest zones of Lomita #1, Chandler #3, and Gardena #1.

Figure 4.32 presents DHS water quality data for perchlorate in production wells across the CWCB during WYs 2001-2004. These data indicate perchlorate is not a widespread problem in the basins. Most production wells tested below the detection limits. Locally, one production well in Norwalk, one in Downey, and one in the Los Angeles Forebay had detectable perchlorate at concentrations below the SAL.

4.12 CONTAMINANT SOURCE IDENTIFICATION

The WRD service area is highly developed with one of the world's largest and most diverse industrial bases. There are many thousands of potential groundwater contamination sources ranging from a home owner changing motor oil to leaks from underground storage tanks at gas stations, refineries, and petrochemical plants. Such potential contamination may pose a threat to the deeper drinking water aquifers.

During the 2003-2004 WY, the District initiated a program to identify and prioritize threats to CWCB groundwater. WRD staff conducted weekly visits to the DTSC and RWQCB-LA offices and local EPA repositories, to review case files on their highest-priority groundwater contamination sites as identified by DTSC, RWQCB and EPA

personnel. Staff generated concise summaries of these case files. Over the current year, staff will develop a matrix to evaluate these case files using weighted parameters such as depth to water supply aquifers, distance from production wells, and degree of groundwater contamination, and rank the case files in order of the level of effort recommended for WRD to expend in assisting the lead regulatory agency with respect to oversight of monitoring and remediation. **Table 4.4** lists the names cities where contaminated sites are located, as well as the lead regulatory agency and **Figure 4.33** shows the locations of these sites in the WRD.

Several meetings were held among the following agencies to address this contamination on a regional basis: Water Replenishment District, EPA, USGS, RWQCB, DTSC, and City of Santa Fe Springs. A Memorandum of Understanding (MOU) was drafted and distributed for review amongst the agencies. This MOU set forth a basic understanding that each agency will work together cooperatively and that WRD will serve as a clearinghouse for the data being collected. At this time, the final MOU is being circulated amongst the various agencies for signature.

SECTION 5
SUMMARY OF FINDINGS

This Annual Groundwater Monitoring Report was prepared by WRD to report on the groundwater conditions in the CWCB during the WY 2003-2004. A summary of findings is presented below.

- Artificial replenishment activities combined with natural replenishment and controlled pumping have ensured a sustainable, reliable supply of groundwater in the CWCB. Artificial replenishment water sources used by WRD include imported water from the Metropolitan Water District of Southern California, recycled water from the County Sanitation Districts of Los Angeles County, and recycled water with advanced treatment from West Basin MWD.
- At the Montebello Forebay, 27,520 AF of imported water was conserved for replenishment during WY 2003-2004. A total of 44,924 AF of recycled water was conserved for spreading in the Montebello Forebay. A total of 21,361 AF of imported water was injected to the seawater barriers. A total of 3,669 AF of recycled water was purchased for injection into the West Coast Basin Barrier Project. Total artificial replenishment was 93,805 AF for WY 2003-2004.
- Groundwater production in the CWCB was 248,334 AF for Water Year 2003-2004. This amount is less than the adjudicated amount of 281,835 AF.
- Groundwater levels (heads) were monitored continuously in the CWCB during the water year. The WRD nested monitoring wells show clear, significant differences in groundwater elevations between the various aquifers screened. The head differences in the WRD nested monitoring wells reflect both hydrogeologic and pumping conditions in the CWCB. Vertical head differences between 1 and 60 feet occur between zones above and within the producing zones. The greatest head differences tend to occur in the Long Beach area of the Central Basin and Gardena and Carson areas of the West Coast Basin, while the smallest differences occur in the Montebello Forebay recharge area, and the Torrance area which has thick, merged aquifers.

- Basinwide hydrographs and groundwater elevations measured in nested monitoring wells and key production wells indicate significant declines in water levels, up to 40 feet in the Central Basin and generally stable to slightly increasing levels in the West Coast Basin during WY 2003-2004. On average, water levels dropped in the unconfined Montebello Forebay area about 8 feet and in the Los Angeles Forebay about 3 feet during WY 2003-2004. Elsewhere in the confined portions of the deeper aquifers of the basin water levels generally decreased during WY 2003-2004. The change in groundwater storage for the CWCB was calculated at a loss in storage of approximately 43,000 AF from the CWCB.
- The water quality associated with key constituents in untreated imported water used at the Montebello Forebay spreading grounds remains good. Average TDS, hardness, iron and manganese concentrations in both Colorado River and State Project Water remain below their respective MCLs. Meanwhile, TCE and PCE have not been detected in either water source.
- The water quality associated with key constituents in recycled water used at the Montebello Forebay spreading grounds also remains excellent and is carefully monitored and controlled to show little variation over time.
- Stormwater samples are occasionally collected and analyzed for water quality parameters. Samples collected recently show that average stormwater TDS concentrations and hardness are lower than most other sources of replenishment water.
- Based on the data obtained from the WRD nested monitoring wells during WY 2003-2004, the water quality associated with key constituents in groundwater differs both vertically between aquifers and horizontally (areally) across the CWCB.
- TDS concentrations for WRD wells located in the Central Basin are relatively low, while TDS concentrations for WRD wells located in the West Coast Basin are elevated in portions of the basin, primarily the Torrance and Dominguez Gap areas. The elevated TDS concentrations may be caused by seawater intrusion or connate brines, or possibly oil field brines. During this reporting period, concentrations in the Central Basin ranged from 170 mg/L to 2,800 mg/L, and in the West Coast Basin 200 mg/L to 12,000 mg/L. The District is conducting further studies with the USGS

to identify potential sources of high TDS.

- Iron concentrations are potentially problematic in portions of the CWCB. During the current reporting period, concentrations in the Central Basin ranged from non-detectable to 0.6 mg/L, and in the West Coast Basin from non-detectable to 1.1 mg/L. The secondary MCL for iron is 0.3 mg/L. Sources of the localized high iron concentrations have not yet been identified but are possibly naturally occurring.
- Similar to the iron concentrations, manganese concentrations exceed the MCL (50 µg/L) in a large number of nested monitoring wells and production wells across the CWCB. During the current reporting period, concentrations in the Central Basin ranged from non-detectable to 670 µg/L, and in the West Coast Basin from non-detectable to 1,200 µg/L. Similar to iron, sources of the localized high manganese concentrations have not yet been identified but are possibly naturally occurring.
- Nitrate (as nitrogen) concentrations in WRD nested monitoring wells in the Central Basin ranged from non-detectable to 14 mg/L, and in the West Coast Basin from non-detectable to 12 mg/L. Concentrations approaching or exceeding the 10 mg/L MCL tend to be limited to the uppermost zone at a particular nested well and are likely due to localized infiltration and leaching. Concentrations above the MCL were not observed in the Silverado Aquifer. DHS data indicates that none of the CWCB production wells tested for nitrate above the MCL during WYs 2001-2004.
- TCE was not detected in the Silverado Aquifer in the WRD wells sampled, with the exception of South Gate #1. During the current reporting period, concentrations in nested monitoring wells in the Central Basin ranged from non-detectable to 31 µg/L, and in the West Coast Basin from non-detectable to 17 µg/L. DHS data indicate that TCE was detected in 61 production wells in the Central Basin during WYs 2001-2004, 14 out of the 61 detections exceed the MCL for TCE. In the West Coast Basin, TCE was not detected above the MCL in any production wells.
- PCE was detected in eight WRD nested monitoring wells in the Central Basin and one well in the West Coast Basin. PCE was detected in the Silverado Aquifer in three of the WRD wells sampled. During the current reporting period, concentrations in the Central Basin ranged from non-detectable to 11 µg/L, and in the West Coast Basin from non-detectable to 1.5 µg/L. DHS data indicate that PCE was detected in

65 production wells in the Central Basin during WYs 2001-2004. Eleven out of the 65 detections exceeded the MCL for PCE. PCE was not detected in any of the West Coast Basin production wells.

- EPA has adopted a new arsenic standard for drinking water, decreasing the former MCL of 50 µg/L to 10 µg/L. Enforcement of the pending MCL is scheduled to begin in 2006. WRD nested monitoring wells indicate that arsenic concentrations in the southeast portion of the Central Basin exceed the pending MCL. Eight production wells, all in this portion of the Central Basin, have arsenic concentrations exceeding the pending MCL of 10 µg/L. Arsenic was not detected above the MCL in any of the West Coast Basin production wells.
- Chromium, including hexavalent chromium, was detected above the MCL in groundwater samples from one WRD nested monitoring well and three production wells in the vicinity of the Montebello and Los Angeles Forebay areas. Additional monitoring wells and production wells contained detectable chromium concentrations below the MCL. Some of the detections are in the deep aquifers including the Silverado and Sunnyside. DHS data for hexavalent chromium in groundwater from production wells are reasonably consistent with data for nested monitoring wells. WRD is currently conducting an investigation to identify potential sources of hexavalent chromium in the South Gate/Cudahy/Bell Gardens area of the Central Basin.
- MTBE was detected in three Central Basin production wells, all below the MCL.
- Total organic carbon and apparent color are being monitored and studied in relation to potential groundwater production from deeper portions of the CWCB than have typically been utilized in the past.
- Perchlorate was detected in four WRD nested monitoring wells and three production wells in the Central Basin, all concentrations below the SAL. Perchlorate was not detected in West Coast Basin wells.
- As shown by the data presented herein, groundwater in the CWCB is of generally good quality and is suitable for use by the pumpers in the District, the stakeholders, and the public. Localized areas of marginal to poor water quality are either currently receiving or may require treatment prior to being used as a potable source.

- WRD's review of the major contamination sites in the CWCB has resulted in a list of thirty-six priority sites which could impact groundwater. WRD is working with the lead regulatory agencies of these sites to monitor investigation and clean-up activities.

SECTION 6
FUTURE ACTIVITIES

WRD will continue to update and augment its Regional Groundwater Monitoring Program to best serve the needs of the District, the pumpers and the public. Some of the activities planned under this program for the WY 2004-2005 are listed below.

- WRD will continue to maximize recycled water use at the Montebello Forebay spreading grounds without exceeding regulatory limits, because recycled water is a high quality and relatively low-cost replenishment water source. Over the past three years, WRD has nearly fully utilized this resource within regulatory limits.
- WRD will continue to maximize recycled water use at the West Coast Basin barrier, and intends to use recycled water at the Dominguez Gap and Alamitos barriers in WY 2004-2005. Extensive monitoring of these recycled water injection projects will be performed to comply with applicable permits.
- WRD will continue to monitor the quality of replenishment water sources to ensure the CWCB are being recharged with high-quality water.
- Total injection quantities at the Dominguez Gap Barrier is expected to increase over the next several years as additional barrier wells are utilized to further combat seawater intrusion. Injection quantities at the West Coast Basin Barrier and the Alamitos Barrier are expected to remain at current or reduced levels. WRD will work with the pumpers over the next year to find solutions to reduce the injection water demands and/or high costs. Basin management alternatives including Aquifer Storage and Recovery (ASR) projects, pipeline construction, and other conjunctive use projects and programs will be explored to help find solutions to future groundwater resource management challenges.
- WRD continues refining the regional understanding of groundwater occurrence, movement, and quality. Water levels will be recorded using automatic dataloggers to monitor groundwater elevation differences throughout the year.
- WRD will continue to sample groundwater from nested monitoring wells, and

analyze the samples for general water quality constituents. In addition, WRD will continue to focus on constituents of interest to WRD and the pumpers such as TCE, PCE, arsenic, hexavalent chromium, MTBE, perchlorate, and apparent color. New chemicals of concern which have not been comprehensively monitored include NDMA, 1,4-Dioxane, and others

- WRD Staff will be working on refining the hydrogeologic conceptual model of the CWCB using data from the RGWMP and other data to serve as an improved framework for understanding the dynamics of the groundwater system and use as a planning tool.
- WRD staff will continue to be proactively involved in the oversight of the most significant contaminated sites that threaten CWCB groundwater resources.
- WRD will continue to use the data generated by the Regional Groundwater Monitoring Program along with WRD's advanced GIS capabilities to address current and upcoming issues related to water quality and groundwater replenishment in the Central and West Coast Basins.

SECTION 7
REFERENCES

American Water Works Association Research Foundation (AWWA), *Soil Aquifer treatment for Sustainable Water Reuse*, 2001.

Bookman-Edmonston Engineering, Inc., *Report on Program of Water Quality Monitoring*, January 1973.

California Department of Water Resources (DWR), *Bulletin No. 104: Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County, Appendix A – Ground Water Geology*, 1961.

County Sanitation Districts of Los Angeles County (CSDLAC), *Montebello Forebay Groundwater Recharge Engineering Report*, November 1997.

County Sanitation Districts of Los Angeles County (CSDLAC), *Montebello Forebay Groundwater Recharge-WQCB order No. 91-100, Monitoring and Reporting Program No. 5728, Annual Monitoring Reports*, 1999.

Driscoll, Fletcher G, Ph.D., *Groundwater and Wells*, Johnson Filtration Systems, Inc. 1989.

Fetter, C.W., *Applied Hydrogeology, Third Edition*, Prentice-Hall, 1994.

Hem, John D., *Study and Interpretation of the Chemical Characteristics of Natural Water, Third Edition*, U.S. Geological Survey Water-Supply Paper 2254, 1992.

Mendenhall, W.D., 1905, *Development of underground waters in the central coastal plain region of southern California*: U.S. Geological Survey Water Supply Paper 137, 140p.

Metropolitan Water District of Southern California (MWD), *Draft Annual Report*, 1999.

Montgomery Watson, *Report for West Coast Basin Desalinization Feasibility/Siting Study*, February 1997.

Montgomery Watson, *West Coast Basin Plume Mitigation Study*, September 1992.

National Research Council, *Issues in Potable Reuse*, National Academy Press, 1998.

Reichard, Eric G.; Land, Michael; Crawford, Steven M.; Johnson, Tyler; Everett, Rhett; Kulshan, Trayle V.; Ponti, Daniel J.; Halford, Kieth J.;Johnson, Theodore A.; Paybins, Katherine S.; and Nishikawa, Tracey: *Geohydrology, Geochemistry, and Ground-Water Simulation-Optimization of the Central and West Coast Basins, Los Angeles County, California*, United States Geological Survey Water Resources Investigations Report 03-4065; Sacramento, California, 2003.

United States Environmental Protection Agency (EPA), *Whittier Narrows Operable Unit Feasibility Study Addendum*, October 1998.

Water Replenishment District of Southern California (WRD), *Engineering Survey and Report*, 2000.

West Basin Municipal Water District, *West Basin Water Reclamation Treatment Facility, Annual Report*, 1999.

TABLES

TABLE 1.1
CONSTRUCTION INFORMATION FOR WRD NESTED MONITORING WELLS

Well Name	Zone	WRD ID Number	Depth of Well (feet)	Top of Perforation (feet)	Bottom of Perforation (feet)	Aquifer Designation
Carson #1	1	100030	1010	990	1010	Sunnyside
	2	100031	760	740	760	Silverado
	3	100032	480	460	480	Lynwood
	4	100033	270	250	270	Gage
Carson #2	1	101787	1250	1230	1250	Sunnyside
	2	101788	870	850	870	Silverado
	3	101789	620	600	620	Silverado
	4	101790	470	450	470	Lynwood
	5	101791	250	230	250	Gage
Cerritos #1	1	100870	1215	1155	1175	Sunnyside
	2	100871	1020	1000	1020	Sunnyside
	3	100872	630	610	630	Lynwood
	4	100873	290	270	290	Gage
	5	100874	200	180	200	Artesia
	6	100875	135	125	135	Artesia
Cerritos #2	1	101781	1470	1350	1370	Sunnyside
	2	101782	935	915	935	Silverado
	3	101783	760	740	760	Silverado
	4	101784	510	490	510	Jefferson
	5	101785	370	350	370	Gage
	6	101786	170	150	170	Gaspur
Chandler #3B	1	100082	363	341	363	Gage/Lynwood/Silverado
Chandler #3A	2	100083	192	165	192	Gage/Lynwood/Silverado
Commerce #1	1	100881	1390	1330	1390	Pico Formation
	2	100882	960	940	960	Sunnyside
	3	100883	780	760	780	Sunnyside
	4	100884	590	570	590	Silverado
	5	100885	345	325	345	Hollydale
	6	100886	225	205	225	Exposition/Gage
Compton #1	1	101809	1410	1370	1390	Sunnyside
	2	101810	1170	1150	1170	Sunnyside
	3	101811	820	800	820	Silverado
	4	101812	480	460	480	Hollydale
	5	101813	325	305	325	Gage
Downey #1	1	100010	1190	1170	1190	Sunnyside
	2	100011	960	940	960	Silverado
	3	100012	600	580	600	Silverado
	4	100013	390	370	390	Hollydale/Jefferson
	5	100014	270	250	270	Exposition
	6	100015	110	90	110	Gaspur
Gardena #1	1	100020	990	970	990	Sunnyside
	2	100021	465	445	465	Silverado
	3	100022	365	345	365	Lynwood
	4	100023	140	120	140	Gage
Gardena #2	1	101804	1335	1275	1335	Sunnyside
	2	101805	790	770	790	Silverado
	3	101806	630	610	630	Silverado
	4	101807	360	340	360	Lynwood
	5	101808	255	235	255	Gardena
Hawthorne #1	1	100887	990	910	950	Pico Formation
	2	100888	730	710	730	Lower San Pedro/Sunnyside
	3	100889	540	520	540	Lower San Pedro/Sunnyside
	4	100890	420	400	420	Silverado
	5	100891	260	240	260	Lynwood
	6	100892	130	110	130	Gage

TABLE 1.1
CONSTRUCTION INFORMATION FOR WRD NESTED MONITORING WELLS

Well Name	Zone	WRD ID Number	Depth of Well (feet)	Top of Perforation (feet)	Bottom of Perforation (feet)	Aquifer Designation
Huntington Park #1	1	100005	910	890	910	Silverado
	2	100006	710	690	710	Jefferson
	3	100007	440	420	440	Gage
	4	100008	295	275	295	Exposition
	5	100009	134	114	134	Gaspur
Inglewood #1	1	100091	1400	1380	1400	Pico Formation
	2	100092	Abandoned Well			
	3	100093	450	430	450	Silverado
	4	100094	300	280	300	Lynwood
	5	100095	170	150	170	Gage
Inglewood #2	1	100824	860	800	840	Pico Formation
	2	100825	470	450	470	Pico Formation
	3	100826	350	330	350	Silverado
	4	100827	245	225	245	Lynwood
Lakewood #1	1	100024	1009	989	1009	Sunnyside
	2	100025	660	640	660	Silverado
	3	100026	470	450	470	Lynwood
	4	100027	300	280	300	Gage
	5	100028	160	140	160	Artesia
	6	100029	90	70	90	Bellflower
La Mirada #1	1	100876	1150	1130	1150	Sunnyside
	2	100877	985	965	985	Silverado
	3	100878	710	690	710	Lynwood
	4	100879	490	470	490	Jefferson
	5	100880	245	225	245	Gage
Lomita #1	1	100818	1340	1240	1260	Lower San Pedro
	2	100819	720	700	720	Silverado
	3	100820	570	550	570	Silverado
	4	100821	420	400	420	Silverado
	5	100822	240	220	240	Gage
	6	100823	120	100	120	Gage
Long Beach #1	1	100920	1470	1430	1450	Sunnyside
	2	100921	1250	1230	1250	Sunnyside
	3	100922	990	970	990	Silverado
	4	100923	619	599	619	Lynwood
	5	100924	420	400	420	Gage
	6	100925	175	155	175	Artesia
Long Beach #2	1	101740	1090	970	990	Sunnyside
	2	101741	740	720	740	Sunnyside
	3	101742	470	450	470	Silverado
	4	101743	300	280	300	Lynwood
	5	101744	180	160	180	Gage
	6	101745	115	95	115	Gaspur
Long Beach #3	1	101751	1390	1350	1390	Lower San Pedro
	2	101752	1017	997	1017	Silverado
	3	101753	690	670	690	Silverado
	4	101754	550	530	550	Silverado
	5	101755	430	410	430	Lynwood
Long Beach #4	1	101759	1380	1200	1220	Pico Formation
	2	101760	820	800	820	Lower San Pedro
Long Beach #6	1	101792	1530	1490	1510	Lower San Pedro
	2	101793	950	930	950	Sunnyside
	3	101794	760	740	760	Sunnyside
	4	101795	500	480	500	Silverado
	5	101796	400	380	400	Lynwood
	6	101797	240	220	240	Gage

TABLE 1.1
CONSTRUCTION INFORMATION FOR WRD NESTED MONITORING WELLS

Well Name	Zone	WRD ID Number	Depth of Well (feet)	Top of Perforation (feet)	Bottom of Perforation (feet)	Aquifer Designation
Long Beach #8	1	101819	1495	1435	1455	Lower San Pedro
	2	101820	1040	1020	1040	Silverado
	3	101821	800	780	800	Silverado
	4	101822	655	635	655	Silverado
	5	101823	435	415	435	Lynwood
	6	101824	185	165	185	Gage
Los Angeles #1	1	100926	1370	1350	1370	Pico Formation
	2	100927	1100	1080	1100	Sunnyside
	3	100928	940	920	940	Silverado
	4	100929	660	640	660	Lynwood
	5	100930	370	350	370	Gage
Montebello #1	1	101770	980	900	960	Pico Formation
	2	101771	710	690	710	Sunnyside
	3	101772	520	500	520	Silverado
	4	101773	390	370	390	Lynwood
	5	101774	230	210	230	Gage
	6	101775	110	90	110	Exposition
Norwalk #1	1	101814	1420	1400	1420	Sunnyside
	2	101815	1010	990	1010	Silverado
	3	101816	740	720	740	Lynwood
	4	101817	450	430	450	Jefferson
	5	101818	240	220	240	Gage
Pico #1	1	100001	900	860	900	Pico Formation
	2	100002	480	460	480	Silverado
	3	100003	400	380	400	Silverado
	4	100004	190	170	190	Jefferson
Pico #2	1	100085	1200	1180	1200	Sunnyside
	2	100086	850	830	850	Sunnyside
	3	100087	580	560	580	Sunnyside
	4	100088	340	320	340	Silverado
	5	100089	255	235	255	Lynwood
	6	100090	120	100	120	Gaspur
PM-1 Columbia	1	100042	600	555	595	Lower San Pedro
	2	100043	505	460	500	Silverado
	3	100044	285	240	280	Lynwood
	4	100045	205	160	200	Gage
PM-3 Madrid	1	100034	685	640	680	Lower San Pedro
	2	100035	525	480	520	Silverado
	3	100036	285	240	280	Lynwood
	4	100037	190	145	185	Gage
PM-4 Mariner	1	100038	715	670	710	Lower San Pedro
	2	100039	545	500	540	Silverado
	3	100040	385	340	380	Lynwood
	4	100041	245	200	240	Gage
Rio Hondo #1	1	100064	1150	1110	1130	Sunnyside
	2	100065	930	910	930	Sunnyside
	3	100066	730	710	730	Sunnyside
	4	100067	450	430	450	Silverado
	5	100068	300	280	300	Lynwood
	6	100069	160	140	160	Gardena
South Gate #1	1	100893	1460	1440	1460	Sunnyside
	2	100894	1340	1320	1340	Sunnyside
	3	100895	930	910	930	Sunnyside
	4	100896	585	565	585	Lynwood/Silverado
	5	100897	250	220	240	Exposition

TABLE 1.1
CONSTRUCTION INFORMATION FOR WRD NESTED MONITORING WELLS

Well Name	Zone	WRD ID Number	Depth of Well (feet)	Top of Perforation (feet)	Bottom of Perforation (feet)	Aquifer Designation
Westchester #1	1	101776	860	740	760	Pico Formation
	2	101777	580	560	580	Lower San Pedro
	3	101778	475	455	475	Silverado
	4	10179	330	310	330	Lynwood
	5	101780	235	215	235	Gage
Whittier #1	1	101735	1298	1180	1200	Pico Formation
	2	101736	940	920	940	Sunnyside
	3	101737	620	600	620	Silverado
	4	101738	470	450	470	Jefferson
	5	101739	220	200	220	Gage
Willowbrook #1	1	100016	905	885	905	Pico Formation
	2	100017	520	500	520	Silverado
	3	100018	380	360	380	Lynwood
	4	100019	220	200	220	Gage
Wilmington #1	1	100070	1040	915	935	Sunnyside
	2	100071	800	780	800	Sunnyside
	3	100072	570	550	570	Silverado
	4	100073	245	225	245	Lynwood
	5	100074	140	120	140	Gage
Wilmington #2	1	100075	1030	950	970	Sunnyside
	2	100076	775	755	775	Silverado
	3	100077	560	540	560	Lynwood
	4	100078	410	390	410	Lynwood
	5	100079	140	120	140	Gage

TABLE 2.1
SUMMARY OF SPREADING OPERATIONS AT MONTEBELLO FOREBAY

(Acre-feet)

Water Year	Rio Hondo (includes Spreading Grounds & Whittier Narrows Reservoir)				San Gabriel (includes unlined river and Spreading Grounds)				Total Recharge			
	Imported	Recycled	Local	Total	Imported	Recycled	Local	Total	Imported	Recycled	Local	Total
1963/64	44,366	4,758	6,013	55,137	40,150	4,145	3,979	48,274	84,516	8,903	9,992	103,411
1964/65	64,344	2,501	8,616	75,461	69,995	4,867	4,481	79,343	134,339	7,368	13,097	154,804
1965/66	62,067	9,984	31,317	103,368	32,125	3,129	14,433	49,687	94,192	13,113	45,750	153,055
1966/67	46,322	14,117	37,428	97,867	20,813	2,106	22,392	45,311	67,135	16,223	59,820	143,178
1967/68	65,925	16,299	27,885	110,109	12,402	1,975	11,875	26,252	78,327	18,274	39,760	136,361
1968/69	13,018	6,105	69,055	88,178	4,895	7,772	50,106	62,773	17,913	13,877	119,161	150,951
1969/70	25,474	13,475	24,669	63,618	35,164	3,683	28,247	67,094	60,638	17,158	52,916	130,712
1970/71	41,913	11,112	24,384	77,409	21,211	8,367	21,735	51,313	63,124	19,479	46,119	128,722
1971/72	15,413	12,584	10,962	38,959	14,077	4,959	6,218	25,254	29,490	17,543	17,180	64,213
1972/73	47,712	12,238	33,061	93,011	32,823	9,767	12,016	54,606	80,535	22,005	45,077	147,617
1973/74	40,593	9,574	18,421	68,588	34,271	10,516	8,544	53,331	74,864	20,090	26,965	121,919
1974/75	29,173	11,359	16,542	57,075	32,974	8,084	10,360	51,418	62,147	19,443	26,902	108,493
1975/76	14,783	8,371	10,503	33,657	19,611	10,297	7,763	37,671	34,394	18,668	18,266	71,328
1976/77	11,349	3,195	7,753	22,297	2,548	15,707	5,165	23,420	13,897	18,902	12,918	45,717
1977/78	19,112	7,424	53,086	79,622	11,249	9,938	74,967	96,154	30,361	17,362	128,053	175,776
1978/79	27,486	6,233	36,659	70,377	15,143	14,367	17,250	46,760	42,629	20,600	53,909	117,137
1979/80	11,229	8,082	54,416	73,726	6,602	14,549	39,753	60,904	17,831	22,631	94,169	134,630
1980/81	43,040	9,177	38,363	90,581	13,823	16,283	8,860	38,966	56,863	25,460	47,223	129,547
1981/82	19,299	9,667	37,730	66,696	11,239	19,143	8,283	38,665	30,538	28,810	46,013	105,361
1982/83	3,203	7,512	89,153	99,868	5,975	9,419	36,893	52,287	9,178	16,931	126,046	152,155
1983/84	18,815	9,647	38,395	66,857	912	17,371	18,667	36,950	19,727	27,018	57,062	103,807
1984/85	33,364	7,848	23,614	64,826	3,879	12,930	10,620	27,429	37,243	20,778	34,234	92,255
1985/86	8,128	9,234	51,913	69,275	10,927	16,806	13,045	40,778	19,055	26,040	64,958	110,053
1986/87	-	12,234			64,575	87,921			64,575	100,155	16,700	181,431
1987/88	16,105	12,560	22,508	51,173	6,529	24,678	22,125	53,332	22,634	37,238	44,633	104,505
1988/89	-	26,568			63,216	25,981			63,216	52,548	24,200	139,964
1989/90	7,079	25,629			72,196	24,560			79,275	50,188	26,400	155,864
1990/91	33,320	20,927			34,215	33,045			67,536	53,972	18,300	139,808
1991/92	28,695	19,156			58,381	28,679			87,077	47,835	71,000	205,911
1992/93	4,306	18,526			26,596	32,041			30,902	50,567	107,700	189,169
1993/94	7,599	26,654			25,893	27,361			33,492	54,015	36,800	124,307
1994/95	3,827	16,397			25,227	22,861			29,054	39,258	92,100	160,411
1995/96	12,304	24,154	41,514	77,972	3,899	26,502	13,709	44,110	16,203	50,656	55,223	122,082
1996/97	12,652	17,899	33,658	64,209	4,732	28,085	17,715	50,532	17,384	45,984	51,373	114,741
1997/98	889	14,984	52,958	68,831	-	19,594	32,580	52,174	889	34,578	85,538	121,005
1998/99	-	23,102	14,840	37,942	-	18,099	11,990	30,089	-	41,201	26,830	68,031
1999/00	43,441	16,093	5,700	65,234	1,596	27,049	15,036	43,681	45,037	43,142	20,736	108,915
2000/01									23,451	43,778	42,290	109,519
2001/02				72,874				47,597	41,268	60,596	18,607	120,471
2002/03				83,757				39,606	22,366	42,640	58,357	123,363
2003/04				64,399				38,512	27,520	44,924	30,467	102,911

Notes:

1) These amounts may differ from those shown in WRD's Annual Engineering Survey and Report (ESR). The ESR reflects only water that WRD purchased for replenishment. However, some of this water may percolate or evaporate in San Gabriel Valley before it reaches the spreading grounds. Other entities such as LACDPW or the Main San Gabriel Basin Watermaster may also purchase replenishment water that is spread and accounted for in the above table. Recycled water is also provided by CSDLAC's Pomona treatment plant and is not paid for by WRD. This table reflects water which was actually conserved in the spreading grounds as reported by LACDPW.

2) Data for shaded areas in the above table were not available from LACDPW. In recent years, only total system recharge volumes could be reported, not relative imported/recycled/local volumes. Corresponding local water rechage volumes were calculated by subtracting imported and reclaimed water volumes from the total volume.

TABLE 2.2
HISTORICAL QUANTITIES OF ARTIFICIAL REPLENISHMENT
WATER AT SEAWATER INTRUSION BARRIERS

(Acre-feet)

WATER YEAR	WEST COAST BASIN BARRIER			DOMINGUEZ GAP BARRIER	ALAMITOS BARRIER (a)			TOTAL
	Imported	Recycled	Total		WRD	OCWD	Total	
1952/53	1,140		1,140					1,140
1953/54	3,290		3,290					3,290
1954/55	2,740		2,740					2,740
1955/56	2,840		2,840					2,840
1956/57	3,590		3,590					3,590
1957/58	4,330		4,330					4,330
1958/59	3,700		3,700					3,700
1959/60	3,800		3,800					3,800
1960/61	4,480		4,480					4,480
1961/62	4,510		4,510					4,510
1962/63	4,200		4,200					4,200
1963/64	10,450		10,450					10,450
1964/65	33,020		33,020		2,760	200	2,960	35,980
1965/66	44,390		44,390		3,370	350	3,720	48,110
1966/67	43,060		43,060		3,390	490	3,880	46,940
1967/68	39,580		39,580		4,210	740	4,950	44,530
1968/69	36,420		36,420		4,310	950	5,260	41,680
1969/70	29,460		29,460		3,760	720	4,480	33,940
1970/71	29,870		29,870	2,200	3,310	820	4,130	36,200
1971/72	26,490		26,490	9,550	4,060	930	4,990	41,030
1972/73	28,150		28,150	8,470	4,300	880	5,180	41,800
1973/74	27,540		27,540	7,830	6,140	1,150	7,290	42,660
1974/75	26,430		26,430	5,160	4,440	720	5,160	36,750
1975/76	35,220		35,220	4,940	4,090	570	4,660	44,820
1976/77	34,260		34,260	9,280	4,890	880	5,770	49,310
1977/78	29,640		29,640	5,740	4,020	830	4,850	40,230
1978/79	23,720		23,720	5,660	4,220	900	5,120	34,500
1979/80	28,630		28,630	4,470	3,560	580	4,140	37,240
1980/81	26,350		26,350	3,550	3,940	530	4,470	34,370
1981/82	24,640		24,640	4,720	4,540	390	4,930	34,290
1982/83	33,950		33,950	6,020	3,270	1,940	5,210	45,180
1983/84	28,000		28,000	7,640	2,440	1,400	3,840	39,480
1984/85	25,210		25,210	7,470	3,400	1,450	4,850	37,530
1985/86	20,260		20,260	6,160	3,410	1,860	5,270	31,690
1986/87	26,030		26,030	6,230	4,170	2,750	6,920	39,180
1987/88	24,270		24,270	7,050	3,990	2,170	6,160	37,480
1988/89	22,740		22,740	5,220	3,900	1,680	5,580	33,540
1989/90	20,279		20,279	5,736	4,110	2,000	6,110	32,125
1990/91	16,039		16,039	7,756	4,096	1,818	5,914	29,709
1991/92	22,180		22,180	6,894	4,172	1,553	5,725	34,799
1992/93	21,516		21,516	4,910	3,350	1,567	4,917	31,343
1993/94	15,482		15,482	5,524	2,794	1,309	4,103	25,109
1994/95	14,237	1,480	15,717	4,989	2,883	889	3,772	24,478
1995/96	12,426	4,170	16,596	5,107	3,760	2,010	5,770	27,473
1996/97	11,372	6,241	17,613	5,886	3,854	1,751	5,605	29,103
1997/98	8,173	8,306	16,479	3,771	3,677	1,503	5,180	25,430
1998/99	10,125	6,973	17,098	4,483	4,012	1,689	5,701	27,282
1999/00	11,172	7,460	18,632	6,010	4,028	1,709	5,737	30,379
2000/01	13,988	6,838	20,826	3,923	3,710	1,923	5,633	30,382
2001/02	12,724	7,276	20,000	5,459	3,961	2,232	6,193	31,652
2002/03	10,419	6,192	16,611	8,056	3,287	1,197	4,484	29,151
2003/04	9,304	3,669	12,973	6,089	3,876	2,092	5,968	25,030

(a) Alamitos Barrier Water is purchased by WRD on the Los Angeles County side of the barrier, and by Orange County Water District on the Orange County side.

TABLE 2.3
WATER QUALITY OF REPLENISHMENT WATER, WATER YEAR 2003-2004

Constituent	Units	Treated Colorado River/State Project Water[a] 2003[d]	Untreated Colorado River Water[b] 2003[d]	Untreated State Project Water[b] 2003[d]	West Basin MWD WRP[c] 2003[e]	Whittier Narrows WRP[b] 2002-2003[f]	San Jose Creek East WRP[b] 2002-2003[f]	San Jose Creek West WRP[b] 2002-2003[f]	Pomona WRP[b] 2002-2003[f]	Stormwater[g] 2002-2003
Total Dissolved Solids (TDS)	mg/L	387/301	593	242	48	523	632	527	538	253
Hardness	mg/L	164/120	288	99	26	178	198	190	204	125
Sulfate	mg/L	111/48	232	33	9.1	91	124	78	61	50
Chloride	mg/L	79/82	81	64	6	98	159	105	135	36
Nitrogen (Nitrate as N)	mg/L	0.5/0.6	ND	0.70	ND	5.37	3.45	3.92	2.15	0.95
Iron	mg/L	ND/ND	ND	0.124	ND	<0.05	0.08	<0.06	<0.05	0.43
Manganese	ug/L	ND/ND	ND	0.022	ND	<7	30	10	<7	NA
Trichloroethylene (TCE)	ug/L	ND/ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	NA
Tetrachloroethylene (PCE)	ug/L	ND/ND	ND	ND	ND	<0.5	<0.5	<0.6	<0.5	NA
Total Organic Carbon (TOC)	mg/L	2.1/2.1	3.4	3.7	0.2	6.63	7.95	8	9.6	7.54
Perchlorate	ug/L	ND/ND	ND	ND	NA	NA	NA	NA	NA	NA

Notes:

a = Used at the seawater intrusion barriers

b = Used at the Montebello Forebay spreading grounds

c = Used at the West Coast Basin Barrier

d = Average concentration data from Metropolitan Water District of Southern California (MWD), for calendar year 2003

e = Average concentration data from West Basin Municipal Water District (West Basin MWD), for calendar year 2003

f = Average concentration data from County Sanitation Districts of Los Angeles County (CSDLAC), for WY 2002-2003

g = Average concentration data from LACDPW, for samples collected from San Gabriel River WY 2002-2003

Sources of data:

2003 Water Quality Report to MWD Member Agencies

Montebello Forebay Groundwater Recharge annual report (CSDLAC, December 2003)

West Basin Water Recycling Facility Annual Report (West Basin MWD, 2003)

Los Angeles County Stormwater Monitoring Report, WY 2002-2003 (LACDPW Web Site)

TABLE 3.1
HISTORICAL AMOUNTS OF GROUNDWATER PRODUCTION
(Acre-feet)

WATER YEAR	CENTRAL BASIN	WEST COAST BASIN	TOTAL
1960/61	292,500	61,900	354,400
1961/62	275,800	59,100	334,900
1962/63	225,400	59,100	284,500
1963/64	219,100	61,300	280,400
1964/65	211,600	59,800	271,400
1965/66	222,800	60,800	283,600
1966/67	206,700	62,300	269,000
1967/68	220,100	61,600	281,700
1968/69	213,800	61,600	275,400
1969/70	222,200	62,600	284,800
1970/71	211,600	60,900	272,500
1971/72	216,100	64,800	280,900
1972/73	205,600	60,300	265,900
1973/74	211,300	55,000	266,300
1974/75	213,100	56,700	269,800
1975/76	215,300	59,400	274,700
1976/77	211,500	59,800	271,300
1977/78	196,600	58,300	254,900
1978/79	207,000	58,000	265,000
1979/80	209,500	57,100	266,600
1980/81	211,915	57,711	269,626
1981/82	202,587	61,874	264,461
1982/83	194,548	57,542	252,090
1983/84	196,660	51,930	248,590
1984/85	193,085	52,746	245,831
1985/86	195,889	52,762	248,650
1986/87	196,587	48,026	244,613
1987/88	194,561	43,833	238,394
1988/89	200,105	44,162	244,267
1989/90	197,811	47,904	245,715
1990/91	186,977	53,075	240,052
1991/92	196,382	55,964	252,346
1992/93	150,386	40,058	190,444
1993/94	156,930	41,768	198,697
1994/95	181,164	41,396	222,560
1995/96	182,067	52,759	234,826
1996/97	187,452	52,581	240,033
1997/98	188,988	51,841	240,829
1998/99	204,418	51,331	255,749
1999/00	197,946	53,579	251,525
2000/01	195,255	53,842	249,047
2001/02	199,900	50,066	249,966
2002/03	190,082	51,789	241,871
2003/04	200,332	47,965	248,297

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2003-2004

	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6
Carson #1						Reference Point Elevation: 24.16
Depth of Well	990-1010	740-760	460-480	250-270		
Aquifer Name	Sunnyside	Silverado	Lynwood	Gage		
11/26/2003	-61.62	-60.9	-23.81	-21.78		
12/31/2003	-61.06	-60.32	-23.59	-21.66		
3/29/2004	-60.23		-23.49	-21.6		
4/8/2004	-58.18	-57.43	-23.28	-21.4		
6/28/2004	-55.92	-55.27	-22.39	-20.63		
7/13/2004	-56.91	-56.02	-22.47	-20.69		
9/8/2004	-57.39	-56.47	-22.57	-20.68		
9/29/2004	-57.95	-57.02	-22.75	-20.9		
Carson #2						Reference Point Elevation: 39.81
Depth of Well	1230-1250	850-870	600-620	450-470	230-250	
Aquifer Name	Sunnyside	Silverado	Silverado	Lynwood	Gage	
12/31/2003	-47.39	-41.63	-41.27	-37.92	-35.3	
3/30/2004	-46.61	-42.53	-42.06	-37.84	-34.9	
5/11/2004	-44.85	-40.81	-40.38	-36.51	-33.78	
6/28/2004	-44.14	-38.67	-38.35	-35.28	-32.93	
9/30/2004	-44.64	-39.58	-39.23	-37.02	-34.75	
Cerritos #1						Reference Point Elevation: 40.72
Depth of Well	1155-1175	1000-1020	610-630	270-290	180-200	125-135
Aquifer Name	Sunnyside	Sunnyside	Lynwood	Gage	Artesia	Artesia
10/27/2003	-36.23	-35.46	-36.52	12.06	17.03	17.11
12/30/2003	-28.7	-31.06	-24.93	14.92	19.26	19.3
1/4/2004	-28.19	-30.51	-25.11	15.12	19.48	19.52
2/27/2004	-21.35	-24.46	-23.32	16.62	20.62	20.69
3/9/2004	-20.5	-22.59	-21.93	16.63	20.6	20.64
3/30/2004	-24.85	-26.61	-26.13	15.77	19.77	19.89
7/1/2004	-42.15	-45.65	-46.06	8.57	13.5	13.58
9/14/2004	-50.8	-56.93	-50.4	7.8	13.38	13.43
9/27/2004	-48.42	-55.97	-50.35	7.92	13.37	13.41
Cerritos #2						Reference Point Elevation: 75.27
Depth of Well	1350-1370	915-935	740-760	490-510	350-370	150-170
Aquifer Name	Sunnyside	Silverado	Silverado	Jefferson	Gage	Gaspur
12/31/2003	-7.61	-13.93	-16.69	0.5	24.69	31.87
3/29/2004	-1.9	-12.86	-6.91	4.22	25.92	32.26
5/18/2004	-4.68	-24.66	-28.31	-6.98	22.22	31.17
6/28/2004	-10.82	-26.47	-29.69	-7.9	20.85	29.88
9/16/2004	-20.9	-35.2	-34.38	-11.44	19.63	40.06
Chandler #3						Reference Point Elevation: 153.2
Depth of Well	341-363	165-192				
Aquifer Name	Gage/Lynw/Silv	Gage/Lynw/Silv				
12/29/2003	-23.88	-23.7				
03/29/2004	-24.1	-23.72				
06/29/2004	-23.52	-23.44				
09/30/2004	-23.56	-23.39				
Commerce #1						Reference Point Elevation: 170.09
Depth of Well	1330-1390	940-960	760-780	570-590	325-345	205-225
Aquifer Name	Pico	Sunnyside	Sunnyside	Silverado	Hollydale	Exposition/Gage
12/29/2003	57.67	55.94	52.48	24.89	31.34	58.31
1/4/2004	57.64	56.53	53.26	25.96	32.4	58.48
2/4/2004	57.59	56.54	52.9	21.8	25.18	57.96
3/30/2004	57.66	59.19	55.84	26.59	31.43	58.37
6/29/2004	57.43	55.78	51.57	21.62	24.86	57.32
9/27/2004	63.5	51.42	47.17	14.28	20.71	57.11
Compton #1						Reference Point Elevation: 67.17
Depth of Well	1370-1390	1150-1170	800-820	460-480	325-345	
Aquifer Name	Sunnyside	Sunnyside	Silverado	Hollydale	Gage	
10/1/2003	-48.62	-48.41	-18.83	-8.08	-6.84	
12/29/2003	-36.48	-36.41	-16	-3.03	0.22	
3/17/2004	-27.83	-27.83	-13.05	-0.41	0.54	
3/30/2004	-23.88	-23.87	-12.6	-1.35	-0.86	
5/19/2004	-28.76	-15.1	-15.1	-5.86	-5.33	
6/28/2004	-41.9	-41.71	-17.86	-6.82	-3.1	
7/26/2004	-57.01	-56.73	-20.84	-9.01	-5.83	
9/23/2004	-68.78	-68.47	-24.99	-12.11	-9	

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2003-2004

	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6
Downey #1					Reference Point Elevation: 97.21	
Depth of Well	1170-1190	940-960	580-600	370-390	250-270	90-110
Aquifer Name	Sunnyside	Silverado	Silverado	Hollydale/Jefferson	Exposition	Gaspur
1/5/2004	6.8	9.72	16.52	16.33	40.36	43.71
1/9/2004	7.08	9.88	16.26	15.95	40.32	43.74
3/30/2004	12.4	13.41	15.28	13.58	39.65	43.53
5/25/2004	9.75	9.7	8.85	8.09	38.37	42.91
6/30/2004	6.61	7.06	10.41	23.45	36.86	42.52
9/16/2004	-4.17	-0.6	1.61	3.99	36.76	41.9
9/22/2004	-4.79	-0.95	1.61	2.78	38.16	41.8
Gardena #1					Reference Point Elevation: 80.79	
Depth of Well	970-990	445-465	345-365	120-140		
Aquifer Name	Sunnyside	Silverado	Lynwood	Gage		
12/29/2003	-61.42	-126.24	-87.14	-16.57		
3/30/2004	-59.74	-118.98	-81.07	-16.23		
6/27/2004	-59.34	-124.47	-88.5	-16.38		
9/13/2004	-58.95	-122.8	-85.83	-16.42		
9/27/2004	-58.96	-123.76	-88.46	-16.47		
Gardena #2					Reference Point Elevation: 26.74	
Depth of Well	1275-1335	770-790	610-630	340-360	235-255	
Aquifer Name	Sunnyside	Silverado	Silverado	Lynwood	Gardena	
12/29/2003	-49.68	-63.08	-63.17	-29.1	-15.17	
3/16/2004	-48.94	-61.23	-61.34	-28.57	-14.91	
3/29/2004	-48.92	-60.7	-60.79	-28.54	-14.97	
6/27/2004	-47.94	-60.82	-60.94	-28.45	-14.89	
9/14/2004	-47.51	-56.54	-56.61	-27.51	-14.95	
9/26/2004	-47.47	-60.28	-60.33	-28.39	-15.12	
Hawthorne #1					Reference Point Elevation: 86.35	
Depth of Well	910-950	710-730	520-540	400-420	240-260	110-130
Aquifer Name	Pico	Lower San Pedro	Lower San Pedro	Silverado	Lynwood	Gage
11/4/2003	-96.15	-18.17	-17.04	-16.81	-13.5	-2.9
12/29/2003	-91.83	-15.72	-14.74	-14.56	-10.82	-2.25
6/27/2004	-102.42	-17.96	-16.81	-16.59	-12.11	-2.31
9/20/2004	-104.52	-20.85	-19.74	-19.54	-14.22	-2.91
Huntington Park #1					Reference Point Elevation: 177.08	
Depth of Well	890-910	690-710	420-440	275-295		
Aquifer Name	Silverado	Jefferson	Gage	Exposition		
12/30/2003	-27.9	-27.59	-22.15	16.24		
2/4/2004	-30.02	-29.87		16.42		
3/30/2004	-27.99	-29.04	-24.56	16.08		
6/28/2004	-33.63	-33.63	-28.13	14.9		
9/22/2004	-36.32	-38.45	-32.04	13.9		
Inglewood #1					Reference Point Elevation: 110.56	
Depth of Well	1380-1400		430-450	280-300	150-170	
Aquifer Name	Pico		Silverado	Lynwood	Gage	
12/29/2003	-35.72		-48.39	-4.4	1.08	
3/30/2004	-36.46		-44.55	-3.66	1.26	
6/27/2004	-35.39		-55.45	-5.01	1.2	
9/2/2004	-35.98		-57.1	-5.39	1.02	
9/14/2004	-36.5		-57.22	-5.39	1.08	
9/21/2004	-29.99		-57.67	-5.6	0.88	
Inglewood #2					Reference Point Elevation: 217.33	
Depth of Well	800-840	450-470	330-350	225-245		
Aquifer Name	Pico	Pico	Silverado	Lynwood		
12/29/2003	-22.82	-18.52	-8.72	-3.76		
3/30/2004	-23.43	-18.44	-8.55	-3.63		
6/27/2004	-23.45	-18.11	-8.32	-3.47		
9/1/2004	-23.68	-18.19	-8.41			
9/30/2004	-23.74	-18.14	-8.2	-3.45		
Lakewood #1					Reference Point Elevation: 37.91	
Depth of Well	989-1009	640-660	450-470	280-300	140-160	70-90
Aquifer Name	Sunnyside	Silverado	Lynwood	Gage	Artesia	Bellflower
12/30/2003	-50.19	-45.68	-44.22	-25.78	-12.19	11.43
3/30/2004	-39.71	-38.79	-37.17	-20.22	-8.46	12.25
5/24/2004	-85.54	-62.21	-60.12	-27.55	-15.1	10.31
6/29/2004	-70.12	-59.31	-57.66	-29.5	-15.69	10.86
9/20/2004	-120.36	-82.42	-79.78	-36.99	-20.34	10.1

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2003-2004

	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6
La Mirada #1					Reference Point Elevation: 75.85	
Depth of Well	1130-1150	965-985	690-710	470-490	225-245	
Aquifer Name	Sunnyside	Silverado	Lynwood	Jefferson	Gage	
10/27/2003	-28.25	-30.08	-29.55	-42.37	-23.56	
12/30/2003	-13.81	-16.45	-17.71	-33.93	-14.59	
3/29/2004	-4.97	-4.97	-13.52	-34.48	-14.1	
6/28/2004	-11	-10.96	-23.62	-46.49	-25.84	
9/14/2004	-26.51	-26.59	-33.8	-50.96	-30.08	
9/30/2004	-28.95	-29.35	-34.45	-44.8	-28.81	
Lomita #1						Reference Point Elevation: 76.91
Depth of Well	1240-1260	700-720	550-570	400-420	220-240	100-120
Aquifer Name	Lower San Pedro	Silverado	Silverado	Silverado	Gage	Gage
12/30/2003	-34.99	-26.67	-24.91	-26.49	-22.2	-25.21
3/29/2004	-32.41	-25.62	-24.02	-25.67	-22.04	-24.32
6/29/2004	-33.41	-25.58	-24.33	-25.43	-21.76	-24.48
9/14/2004	-37.52	-27.91	-25.78	-25.32	-22.17	-26.43
9/29/2004	-35.73	-26.66	-25	-25.63	-21.69	-24.83
Long Beach #1						Reference Point Elevation: 28.69
Depth of Well	1430-1450	1230-1250	970-990	599-619	400-420	155-175
Aquifer Name	Sunnyside	Sunnyside	Silverado	Lynwood	Gage	Artesia
10/27/2003	-26.42	-28.38	-49.14	-32.88	-28.72	-12.09
11/6/2003	-23.78	-25.21	-46.34	-33.17	-29.81	-10.77
12/31/2003	-16.98	-18.38	-30.99	-27.73	-26.5	-5.45
4/2/2004	-6.84		-19.95	-21.49	-20.92	-6.6
4/19/2004	-4.38	-5.5	-22.5	-21.26	-19.7	-7.84
5/28/2004	-6.48	-8.13	-39.14	-32.74	-32.4	-16.32
6/7/2004	-8.86	-10.89	-41.95	-35.27	-35.55	-17.09
7/6/2004	-17.9	-20.63	-54.14	-41.81	-42.09	-19.65
7/12/2004	-19.32	-21.82	-63.25	-44.36	-44.35	-20.48
7/22/2004	-21.76	-24.42	-71.15	-47.72	-47.21	-21.9
9/14/2004	-38.09	-41.24	-80.51	-52.05	-49.73	-21.86
Long Beach #2						Reference Point Elevation: 42.15
Depth of Well	970-990	720-740	450-470	280-300	160-180	95-115
Aquifer Name	Sunnyside	Sunnyside	Silverado	Lynwood	Gage	Gaspur
10/7/2003	-64.84	-43.46	-40.08	-13.14	-3.03	-1.08
12/31/2003	-45.69	-38.52	-38.96	-12.1	-2.79	-1.14
3/29/2004	-26.04	-31.3	-37.69	-10.13	-1.53	-0.17
6/28/2004	-61.38	-39.62	-36.93	-11.91	-2.41	-0.47
8/26/2004	-94.09	-50.83	-41.04	-14.66	-3.63	-1.28
9/16/2004	-96.89	-51.92	-41.43	-15.11	-3.92	-1.49
Long Beach #3						Reference Point Elevation: 24.60
Depth of Well	1350-1390	997-1017	670-690	530-550	410-430	
Aquifer Name	Lower San Pedro	Silverado	Silverado	Silverado	Lynwood	
12/31/2003	-44.75	-60.6	-60.64	-60.8	-10.5	
3/30/2004	-44.33	-59.06	-59.07	-59.27	-10.85	
5/11/2004	-43.78	-55.84	-55.83	-56.04	-10.28	
6/7/2004	-43.48	-55.11	-55.11	-55.3	-10.25	
7/1/2004	-43.38	-55.32	-55.32	-55.52	-10.18	
9/15/2004	-43.32	-56.12	-56.79	-57.21	-10.92	
Long Beach #4						Reference Point Elevation: 9.52
Depth of Well	1200-1220	800-820				
Aquifer Name	Pico	Lower San Pedro				
12/31/2003	-44.17	-21.32				
03/30/2004	-44.24	-24.15				
07/01/2004	-42.32	-22.12				
09/28/2004	-42.71	-23.88				
Long Beach #6						Reference Point Elevation: 32.53
Depth of Well	1490-1510	930-950	740-760	480-500	380-400	220-240
Aquifer Name	Lower San Pedro	Sunnyside	Sunnyside	Silverado	Lynwood	Gage
12/29/2003	-24.97	-32.71	-32.9	-41.33	-41.26	-29.27
3/29/2004	-16.03	-17.53	-17.35	-23.4	-23.38	-25.25
7/1/2004	-20.13	-42.57	-44.18	-78.71	-78.86	-32.7
8/10/2004	-34.35	-65.24	-67.07	-118.47	-118.38	-38.76
8/25/2004	-39.63	-69.97	-71.27	-120.9	-120.76	-39.46
9/1/2004	-41.65	-71.09	-72.8	-121.67	-121.53	-39.76
9/16/2004	-45.43	-73.83	-75.46	-123.32	-123.19	-40.53

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2003-2004

	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6
Long Beach #8					Reference Point Elevation: 17.78	
Depth of Well	1435-1455	1020-1040	780-800	635-655	415-435	165-185
Aquifer Name	Lower San Pedro	Silverado	Silverado	Silverado	Lynwood	Gage
12/29/2003	-20.94	-41.57	-56.7	-54.2	-53.85	-0.67
2/6/2004	-20.98	-41.62	-56.33	-53.97	-53.52	-1.06
5/11/2004	-20.91	-41.01	-52.79	-50.6	-50.17	-0.76
5/20/2004	-21.04	-41.07	-52.35	-50.23	-49.96	-0.77
6/7/2004	-20.91	-40.85	-52.4	-50.14	-49.76	-0.73
7/1/2004	-21.04	-40.79	-52.19	-49.96	-49.57	-0.76
9/30/2004	-21.01	-40.68	-53.49	-51.16	-50.71	-0.96
Los Angeles #1					Reference Point Elevation: 173.63	
Depth of Well	1350-1370	1080-1100	920-940	640-660	350-370	
Aquifer Name	Pico	Sunnyside	Silverado	Lynwood	Gage	
1/12/2004	-16.39	-22.08	-24	-27.63	-20.99	
3/30/2004	-16.19	-22.01	-23.76	-27.89	-21.1	
6/29/2004	-15.75	-22.73	-24.23	-28.97	-21.66	
9/28/2004	-16.56	-25.67	-27.28	-31.67	-23.17	
Montebello #1					Reference Point Elevation: 192.60	
Depth of Well	960-980	690-710	500-520	370-390	210-230	90-110
Aquifer Name	Pico	Sunnyside	Silverado	Lynwood	Gage	Exposition
12/31/2003	90.13	84.72	83.93	81.18	83.38	DRY
3/30/2004	98.94	99.02	98.16	93.57	87.45	DRY
6/29/2004	95.23	89.05	88.23	84.69	86.42	DRY
9/22/2004	89.88	81.07	80.22	76.85	81.52	DRY
Norwalk #1					Reference Point Elevation: 95.44	
Depth of Well	1400-1420	990-1010	720-740	430-450	220-240	
Aquifer Name	Sunnyside	Silverado	Lynwood	Jefferson	Gage	
12/29/2003	35.21	-4.59	13.76	6.16	6.04	
1/11/2004	35.96	-2.97	15.19	6.84	6.42	
1/12/2004	35.92	-2.91	15.29	6.48	6.21	
3/29/2004	40.53	3.19	18.78	7.03	7.22	
5/19/2004	42.69	7.73	19.44	4.63	4.9	
6/28/2004	41.72	2.67	18.74	-1.28	2.79	
9/28/2004	34.76	-11.5	6.12	-1.32	-0.57	
Pico #1					Reference Point Elevation: 181.06	
Depth of Well	860-900	460-480	380-400	170-190		
Aquifer Name	Pico	Silverado	Silverado	Jefferson		
12/26/2003	131.21	120.3	119.68			
12/31/2003	131.35	120.18	116.86	117.17		
3/24/2004	138.1	136.5	136.29	135.98		
5/25/2004	139.65	126.68	127.63	128.88		
6/30/2004	138.11	126.98	126.49	123.89		
9/16/2004	134.13	107.36	105.99	113.94		
9/30/2004	133.21	104.79	103.55	112.58		
Pico #2					Reference Point Elevation: 149.6	
Depth of Well	1180-1200	830-850	560-580	320-340	235-255	100-120
Aquifer Name	Sunnyside	Sunnyside	Sunnyside	Silverado	Lynwood	Gaspur
12/30/2003	71.54	73.81	77.55	89.19	91.12	101.02
3/31/2004	85.23	85.91	91.19	94.93	96.17	102.39
6/16/2004	73.23	74.77	79.21	87.78	89.12	96.12
6/30/2004	71.43	73	77.59	87.6	86.31	94.55
9/9/2004	62.28	60.68	67.75	83.07	83.44	87.81
9/23/2004	60.4	58.65	64.87	81.69	82.39	86.37
PM-1 Columbia					Reference Point Elevation: 78.42	
Depth of Well	555-595	460-500	240-280	160-200		
Aquifer Name	Lower San Pedro	Silverado	Lynwood	Gage		
12/30/2003	-11.98	-11.02	-9.56	-9.45		
3/31/2004	-11.94	-10.93	-9.75	-9.53		
9/26/2004	-12.63	-11.89	-10.31	-10.16		
PM-3 Madrid					Reference Point Elevation: 70.68	
Depth of Well	640-680	480-520	240-280	145-185		
Aquifer Name	Lower San Pedro	Silverado	Lynwood	Gage		
12/30/2003	-16.74	-13.18	-13.11	-13.08		
3/31/2004	-16.64	-13.19	-13.13	-13.03		
6/30/2004	-16.58	-13.39	-13.34	-13.27		
9/21/2004	-16.81	-13.66	-13.52	-13.45		

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2003-2004

	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6
PM-4 Mariner						Reference Point Elevation: 97.7
Depth of Well	670-710	500-540	340-380	200-240		
Aquifer Name	Lower San Pedro	Silverado	Lynwood	Gage		
12/30/2003	-10.83	-7.59	-5.02	-4.95		
3/31/2004	-10.62	-7.23	-4.74	-4.69		
6/30/2004	-11.12	-8.49	-5.79	-5.76		
9/26/2004	-10.25	-9.27	-6.65	-6.57		
Rio Hondo #1						Reference Point Elevation: 144.36
Depth of Well	1110-1130	910-930	710-730	430-450	280-300	140-160
Aquifer Name	Sunnyside	Sunnyside	Sunnyside	Silverado	Lynwood	Gardena
12/26/2003	63.8	62.93	62.29	54.33	61.69	65.48
2/10/2004	67.74	68.13	67.59	58.89	65.09	68.11
3/30/2004	75.1	75.42	74.72	68.36	75.93	78.77
7/1/2004	65.81	63.38	62.84	54.84	64.49	67.9
9/22/2004	58.31	52.44	51.64	44.12	55.55	59.59
South Gate #1						Reference Point Elevation: 90.96
Depth of Well	1440-1460	1320-1340	910-930	565-585	220-240	
Aquifer Name	Sunnyside	Sunnyside	Sunnyside	Lynwood/Silverado	Exposition	
1/5/2004	-6.52	-3.94	0.75	0.9	34.58	
3/31/2004	-4.26	-3.77	-0.29	-2.93	34.28	
6/30/2004	-9.03	-9.79	-6.5	-6.3	33.41	
9/14/2004	-16.36	-14.6	-9.6	-14.36	32.21	
9/29/2004	-17.31	-16.92	-9.47	-13.65	32	
Westchester #1						Reference Point Elevation: 124.27
Depth of Well	740-760	560-580	455-475	310-330	215-235	
Aquifer Name	Pico	Lower San Pedro	Silverado	Lynwood	Gage	
10/7/2003	-3.75	6.52	6.9	7.13	7.26	
12/29/2003	-2.81	6.33	6.7	6.94	7.07	
3/30/2004	-2.37	6.51	6.9	7.07	7.2	
6/27/2004	-3.18	6.5	6.85	7.03	7.16	
9/15/2004	-4.01	6.35	6.66	6.84	6.96	
Whittier #1						Reference Point Elevation: 217.17
Depth of Well	1180-1200	920-940	600-620	450-470	200-220	
Aquifer Name	Pico	Sunnyside	Silverado	Jefferson	Gage	
10/27/2003	117.38	117.45	110.95	109.29	197.89	
12/31/2003	117.41	117.41	110.67	108.94	197.62	
3/31/2004	117.54	117.54	111.08	109.47	198.14	
5/27/2004	117.72	117.66	111.31	109.96	197.92	
7/1/2004	117.64	117.68	111.49	109.99	197.71	
9/27/2004	117.73	117.69	111.09	109.44	197.23	
Willowbrook #1						Reference Point Elevation: 96.21
Depth of Well	885-905	500-520	360-380	200-220		
Aquifer Name	Pico	Silverado	Lynwood	Gage		
12/29/2003	-41.19	-31.79	-25.71	-25.45		
3/30/2004	-36.14	-30.95	-25.09	-24.94		
6/28/2004	-33.75	-30.24	-26.79	-26.25		
9/21/2004	-53.26	-35.76	-30	-29.32		
Wilmington #1						Reference Point Elevation: 37.96
Depth of Well	915-935	780-800	550-570	225-245	120-140	
Aquifer Name	Sunnyside	Sunnyside	Silverado	Lynwood	Gage	
12/31/2003	-59.43	-59.71	-58.35	-24.64	-21.1	
3/29/2004	-57.8	-58.01	-58.11	-25.11	-21.66	
4/8/2004	-55.85	-56.02	-56.18	-24.6	-21.27	
6/28/2004	-54.09	-54.45	-54.4	-23.55	-20.32	
9/9/2004	-55.92	-56.22	-56.26	-30.76	-22.54	
9/28/2004	-56	-56.3	-56.37	-25.08	-21.73	
Wilmington #2						Reference Point Elevation: 29.78
Depth of Well	950-970	755-775	540-560	390-410	120-140	
Aquifer Name	Sunnyside	Silverado	Lynwood	Lynwood	Gage	
12/31/2003	-43.99	-38.57	-33.01	-31.88	-9.38	
3/16/2004	-44.18	-39.14	-34	-33.11	-9.65	
3/29/2004	-43.04	-37.78	-32.86	-31.92	-9.66	
6/28/2004	-40.32	-35.6	-30.86	-30.13	-9.5	
9/8/2004	-41.95	-37.04	-32.79	-32.14	-9.69	
9/28/2004	-41.83	-37	-32.33	-31.59	-9.87	

TABLE 4.1
MAJOR MINERAL WATER QUALITY GROUPS

GROUP A Generally Calcium Bicarbonate or Calcium Bicarbonate/Sulfate Dominant	GROUP B Generally Calcium-Sodium-Bicarbonate or Sodium-Bicarbonate Dominant	GROUP C Generally Sodium-Chloride Dominant	OTHER Generally Different Than Groups A, B, and C
CENTRAL BASIN			
Cerritos #1 Zones 1, 2, 3, 4, 5, 6 Commerce #1 Zones 2,3,4,5,6 Downey #1 Zones 2, 3, 4, 5, 6 Huntington Park #1 Zones 1, 2, 3, 4 Lakewood #1 Zone 6 Long Beach #1 Zones 5,6 Long Beach #2 Zones 4,5,6 Rio Hondo #1 Zones 1, 2, 3, 4, 5, 6, Pico #1 Zones 2, 3, 4 Pico #2 Zones 1, 2, 3, 4, 5, 6 South Gate #1 Zones 1, 2, 3, 4, 5 Whittier #1 Zones 1,2,3,4,5 Willowbrook #1 Zones 2, 3, 4 Los Angeles #1 Zones 1, 2, 3, 4, 5 Montebello #1 Zones 3, 4, 5 Cerritos #2 Zones 1, 2, 3, 4, 5, 6 Compton #1 Zones 2,3,4,5 Norwalk #1 Zones 1,2,3	Downey #1 Zone 1 Inglewood #2 Zones 1,3 Lakewood #1 Zones 1,2, 3, 4, 5 La Mirada #1 Zones 1, 2, 3, 4 Willowbrook #1 Zone 1 Long Beach #1 Zones 1,2,3,4 Long Beach #2 Zones 1,2,3 Santa Fe Springs #1 Zone 3 Long Beach #6 Zones 1,2 ,3 ,4 ,5 ,6 Montebello #1 Zone 2 Carson #2 Zones 1, 2, 3, 4, 5 Westchester #1 Zones 1, 2, 3, 4, 5 Compton #1 Zone 1	Inglewood #2 Zone 2	La Mirada #1 Zone 5 Pico #1 Zone 1 Santa Fe Springs #1 Zones 1,2,4
WEST COAST BASIN			
Carson #1 Zones 3, 4 Gardena #1 Zones 2, 3, 4 Hawthorne #1 Zones 5,6 Inglewood #1 Zones 3, 4, 5 PM-3 Madrid Zones 3,4	Carson #1 Zones 1, 2 Hawthorne #1 Zones 1,2,3,4 PM-3 Madrid Zone 2 Wilmington #2 Zone 3 Long Beach #3 Zones 1, 2, 3	PM-4 Mariner Zones 2,3,4 Wilmington #1 Zones 1, 2, 3, 4, 5 Wilmington #2 Zones 4, 5 Long Beach #3 Zones 4, 5	Gardena #1 Zone 1 Inglewood #1 Zone 1 Lomita #1 Zones 1, 2, 3, 4, 5, 6 PM-3 Madrid Zone 1 PM-4 Mariner Zone 1 Wilmington #2 Zone 1,2

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Cerritos #1	Cerritos #1	Cerritos #1	Cerritos #1	Cerritos #1	Cerritos #1	Cerritos #1	Cerritos #1	Cerritos #1	Cerritos #1	Cerritos #1	Cerritos #1
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4	Zone 5	Zone 5	Zone 6	Zone 6
				4/26/2004	9/14/2004	4/26/2004	9/14/2004	4/26/2004	9/14/2004	4/26/2004	9/14/2004	4/26/2004	9/14/2004	4/26/2004	9/14/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	280	280	270	290	320	330	270	290	270	290	280	280
Cation Sum	meq/l			4.75	4.74	4.48	4.42	5.46	5.44	4.85	4.72	4.52	4.56	4.61	4.65
Anion Sum	meq/l			4.67	4.51	4.28	4.2	5.2	5	4.59	4.43	4.43	4.16	4.46	4.44
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	0.017	ND	0.025	0.024	0.08	0.072	0.059	0.058	0.064	0.062
Manganese, Total, ICAP/MS	ug/l	50	s	25	26	29	29	44	43	**70**	**72**	**110**	**110**	**130**	**140**
Turbidity	NTU	5	s	0.15	0.1	0.4	0.3	0.1	0.1	0.25	0.2	0.2	0.25	0.25	0.15
Alkalinity	mg/l			160	152	152	147	170	161	176	166	176	163	184	183
Boron	mg/l			0.086	0.09	0.07	0.069	0.089	0.09	0.1	0.093	0.092	0.09	0.078	0.084
Bicarbonate as HCO3,calculated	mg/l			194	184	184	178	207	196	214	202	214	198	224	222
Calcium, Total, ICAP	mg/l			34	34	34	34	44	45	44	44	38	39	45	46
Carbonate as CO3, Calculated	mg/l			3.17	3	2.39	2.31	2.13	2.02	1.75	1.65	1.75	2.04	1.83	2.29
Hardness (Total, as CaCO3)	mg/l			104	104	108	107	135	137	155	151	134	137	151	154
Chloride	mg/l	250	s	14	14	13	13	18	18	11	11	9.9	9.7	9.5	9.4
Fluoride	mg/l	2	p	0.26	0.25	0.36	0.35	0.34	0.34	0.53	0.54	0.46	0.46	0.31	0.3
Hydroxide as OH, Calculated	mg/l			0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.03	0.02	0.03
Langelier Index - 25 degree	None			0.77	0.75	0.65	0.64	0.71	0.7	0.63	0.6	0.56	0.64	0.66	0.76
Magnesium, Total, ICAP	mg/l			4.7	4.6	5.6	5.4	6.2	6	11	10	9.6	9.5	9.5	9.4
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.3	2.1	2.3	2.1	2	1.9	2	1.8	2	1.8	2.1	2
Sodium, Total, ICAP	mg/l			60	60	52	51	62	61	39	38	41	41	35	35
Sulfate	mg/l	250	s	51	51	41	42	61	60	35	37	29	29	24	24
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			0.6	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Dioxide	mg/l			1.54	1.47	1.84	1.78	2.61	2.47	3.4	3.21	3.4	2.5	3.56	2.8
General Physicals															
Apparent Color	ACU	15	s	3	5	3	3	3	5	3	5	3	3	3	5
Lab pH	Units			8.4	8.4	8.3	8.3	8.2	8.2	8.1	8.1	8.1	8.2	8.1	8.2
Odor	TON	3	s	2	**4**	2	**8**	1	**3**	1	2	2	**8**	1	**4**
pH of CaCO3 saturation(25C)	Units			7.626	7.649	7.649	7.663	7.486	7.5	7.471	7.496	7.535	7.557	7.442	7.436
pH of CaCO3 saturation(60C)	Units			7.2	7.2	7.2	7.2	7	7.1	7	7.1	7.1	7.1	7	7
Specific Conductance	umho/cm			458	455	426	420	522	514	445	450	429	427	436	433
Metals															
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	14	15	11	12	19	20	5.6	5.2	9.6	10	36	35
Barium, Total, ICAP/MS	ug/l	1000	p	43	44	92	91	**110**	**110**	53	59	68	75	89	96
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	2.5	ND	2.2	ND	2.2	ND	3.4	ND	3.6	ND	3.3	ND
Hexavalent Chromium (Cr VI)	mg/l														
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p												

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Cerritos #2	Cerritos #2	Cerritos #2	Cerritos #2	Cerritos #2	Cerritos #2	Cerritos #2	Cerritos #2	Cerritos #2	Cerritos #2	Cerritos #2	Cerritos #2
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4	Zone 5	Zone 5	Zone 6	Zone 6
				5/13/2004	9/16/2004	5/13/2004	9/16/2004	5/13/2004	9/16/2004	5/13/2004	9/16/2004	5/13/2004	9/16/2004	5/13/2004	9/16/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	210	230	500	500	220	240	240	220	230	250	860	870
Cation Sum	meq/l			3.84	3.72	8.41	8.19	3.97	4.24	4.45	3.76	4.42	4.33	14.7	14.6
Anion Sum	meq/l			3.54	3.44	8.06	7.96	3.61	3.96	4.07	3.44	4.04	3.91	14.2	14
Iron, Total, ICAP	mg/l	0.3	s	0.017	ND	ND	ND	0.034	0.098	0.059	0.031	0.11	0.05	0.25	0.24
Manganese, Total, ICAP/MS	ug/l	50	s	26	24	ND	ND	**57**	**100**	**79**	**51**	**110**	**77**	**480**	**440**
Turbidity	NTU	5	s	0.1	0.2	0.4	0.3	**6**	0.15	0.7	**9.3**	0.3	0.7	1.6	1.4
Alkalinity	mg/l			150	143	171	161	157	172	178	147	178	168	335	316
Boron	mg/l			0.055	0.059	0.11	0.11	0.074	0.082	0.097	0.063	0.093	0.08	0.11	0.11
Bicarbonate as HCO3,calculated	mg/l			182	174	208	196	191	209	216	178	216	204	408	385
Calcium, Total, ICAP	mg/l			43	43	99	99	45	52	53	44	54	52	180	180
Carbonate as CO3, Calculated	mg/l			1.87	1.42	1.7	1.01	1.97	2.71	2.22	2.31	2.22	2.65	2.11	1.25
Hardness (Total, as CaCO3)	mg/l			134	130	328	321	138	160	169	135	167	165	602	602
Chloride	mg/l	250	s	5.2	5.9	67.4	71	4.9	6	5.5	5.5	5.3	6.3	110	110
Fluoride	mg/l	2	p	0.28	0.28	0.36	0.36	0.29	0.33	0.4	0.29	0.33	0.41	0.33	0.35
Hydroxide as OH, Calculated	mg/l			0.03	0.02	0.02	0.01	0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.009
Langelier Index - 25 degree	None			0.66	0.53	0.97	0.74	0.69	0.89	0.81	0.75	0.82	0.88	1.3	1.1
Magnesium, Total, ICAP	mg/l			5.7	5.5	19	18	6.3	7.4	8.8	6	7.8	8.5	37	37
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	3.1	3	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.7	2.7	4.1	4.1	2.6	2.8	2.8	2.5	2.9	2.7	4.4	4.5
Sodium, Total, ICAP	mg/l			25	24	38	38	26	22	23	23	23	22	58	56
Sulfate	mg/l	250	s	18.3	19	120	120	15	16	16	16	15	17	210	220
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	3.1	3	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4	1.3
Carbon Dioxide	mg/l			2.3	2.76	3.3	4.93	2.41	2.09	2.73	1.78	2.73	2.04	10.3	15.4
General Physicals															
Apparent Color	ACU	15	s	3	3	ND	3	3	3	3	5	3	3	3	5
Lab pH	Units			8.2	8.1	8.1	7.9	8.2	8.3	8.2	8.3	8.2	8.3	7.9	7.7
Odor	TON	3	s	**4**	1	**3**	1	**4**	2	**8**	1	**8**	2	**3**	1
pH of CaCO3 saturation(25C)	Units			7.541	7.571	7.127	7.157	7.511	7.409	7.386	7.551	7.378	7.419	6.579	6.604
pH of CaCO3 saturation(60C)	Units			7.1	7.1	6.7	6.7	7.1	7	6.9	7.1	6.9	7	6.1	6.2
Specific Conductance	umho/cm			341	337	783	771	338	397	376	351	375	402	1200	1320
Metals															
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	2.5	2.5	2	2.2	4	18	11	3.8	17	9.9	4.1	3.3
Barium, Total, ICAP/MS	ug/l	1000	p	90	96	**160**	**170**	96	**160**	**140**	**100**	**150**	**150**	**110**	**100**
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	2.8	4.2	3.9	6.8	3.1	5.2	3.1	4.8	2.7	5.5	6.4	10
Hexavalent Chromium (Cr VI)	mg/l														
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.9
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p												

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	Commerce #1 Zone 2 5/17/2004	Commerce #1 Zone 2 9/27/2004	Commerce #1 Zone 3 5/17/2004	Commerce #1 Zone 3 9/27/2004	Commerce #1 Zone 4 5/17/2004	Commerce #1 Zone 4 9/27/2004	Commerce #1 Zone 5 5/17/2004	Commerce #1 Zone 5 9/27/2004	Commerce #1 Zone 6 5/17/2004	Commerce #1 Zone 6 9/27/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	660	690	480	490	490	500	490	510	390	390
Cation Sum	meq/l			12.6	11.7	8.39	8.52	7.99	8.89	8.62	6.66	6.79	8.46
Anion Sum	meq/l			12.2	12.1	8.27	8.12	8.51	8.07	9.84	8.2	6.34	6.28
Iron, Total, ICAP	mg/l	0.3	s	0.042	0.036	0.094	0.094	0.068	0.075	0.099	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	18	17	**63**	**67**	**68**	**72**	ND	ND	ND	ND
Turbidity	NTU	5	s	**5.3**	1.4	0.4	0.45	0.3	0.25	0.75	0.4	2.5	1.1
Alkalinity	mg/l			298	292	210	204	200	193	283	178	169	162
Boron	mg/l			0.52	0.52	0.23	0.25	0.24	0.26	0.24	0.14	0.15	0.17
Bicarbonate as HCO3,calculated	mg/l			363	356	255	248	243	235	345	217	206	197
Calcium, Total, ICAP	mg/l			62	58	62	62	46	49	63	60	61	78
Carbonate as CO3, Calculated	mg/l			1.87	1.84	2.09	2.55	1.99	0.964	1.78	0.561	1.06	0.51
Hardness (Total, as CaCO3)	mg/l			274	252	241	241	189	201	244	228	231	294
Chloride	mg/l	250	s	220	220	100	99	120	110	71	83	58	60
Fluoride	mg/l	2	p	0.35	0.36	0.36	0.35	0.44	0.45	0.41	0.4	0.46	0.48
Hydroxide as OH, Calculated	mg/l			0.01	0.01	0.02	0.03	0.02	0.01	0.01	0.007	0.01	0.007
Langelier Index - 25 degree	None			0.81	0.77	0.71	0.94	0.7	0.42	0.79	0.27	0.55	0.34
Magnesium, Total, ICAP	mg/l			29	26	21	21	18	19	21	19	19	24
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	3.9	4.2	6.2	6.3
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			6.3	6.1	3.3	3.4	3.2	3.5	3.5	1.9	1.9	2.5
Sodium, Total, ICAP	mg/l			160	150	80	83	95	110	84	47	49	58
Sulfate	mg/l	250	s	ND	ND	59	59	53	52	90	95	41	42
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	3.9	4.2	6.2	6.3
Total Organic Carbon	mg/l			3.1	3.2	0.9	0.9	0.7	0.7	ND	ND	ND	ND
Carbon Dioxide	mg/l			9.14	8.96	4.05	3.13	3.86	7.45	8.69	10.9	5.19	9.9
General Physicals													
Apparent Color	ACU	15	s	**15**	**15**	5	3	3	5	ND	ND	ND	ND
Lab pH	Units			7.9	7.9	8.1	8.2	8.1	7.8	7.9	7.6	7.9	7.6
Odor	TON	3	s	**17**	**4**	1	**4**	1	1	**3**	**3**	1	1
pH of CaCO3 saturation(25C)	Units			7.093	7.13	7.385	7.258	7.397	7.384	7.108	7.33	7.346	7.258
pH of CaCO3 saturation(60C)	Units			6.6	6.7	6.9	6.8	7	6.9	6.7	6.9	6.9	6.8
Specific Conductance	umho/cm			1180	1210	812	837	848	751	763	717	632	640
Metals													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	75	77	73	78	**220**	**220**	80	53	52	82
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	2.6	ND	2.3	ND	8	9.8	11	5.9
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	0.7	0.8	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	1.2	1.7	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p										

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Compton #1	Compton #1	Compton #1	Compton #1	Compton #1	Compton #1	Compton #1	Compton #1	Compton #1	Compton #1
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4	Zone 5	Zone 5
				5/19/2004	9/23/2004	5/19/2004	9/23/2004	5/19/2004	9/23/2004	5/19/2004	9/23/2004	5/19/2004	9/23/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	230	220	290	290	320	310	330	340	340	340
Cation Sum	meq/l			3.92	3.87	5.02	5.07	5.36	5.24	5.81	5.65	5.88	5.79
Anion Sum	meq/l			3.69	3.6	4.77	4.57	5	4.94	5.4	5.34	5.44	4.42
Iron, Total, ICAP	mg/l	0.3	s	0.011	ND	0.022	0.021	0.04	0.05	0.14	0.15	0.074	0.09
Manganese, Total, ICAP/MS	ug/l	50	s	11	12	32	29	**68**	**69**	**100**	**120**	**79**	**93**
Turbidity	NTU	5	s	0.3	0.5	1.3	0.15	4.2	2.8	1.2	1.1	0.2	2.6
Alkalinity	mg/l			162	157	142	139	159	155	165	161	179	173
Boron	mg/l			0.15	0.16	0.1	0.12	0.12	0.12	0.099	0.099	0.13	0.15
Bicarbonate as HCO3,calculated	mg/l			196	190	172	169	193	188	200	196	218	211
Calcium, Total, ICAP	mg/l			19	19	42	43	48	48	61	60	58	57
Carbonate as CO3, Calculated	mg/l			4.03	3.9	2.81	1.1	1.99	1.94	2.06	1.6	1.42	1.09
Hardness (Total, as CaCO3)	mg/l			54.4	54.4	120	123	157	156	180	177	190	188
Chloride	mg/l	250	s	14	14	22	20	22	22	20	20	18	9.1
Fluoride	mg/l	2	p	0.33	0.29	0.33	0.3	0.28	0.24	0.27	0.24	0.35	0.33
Hydroxide as OH, Calculated	mg/l			0.05	0.05	0.04	0.02	0.03	0.03	0.03	0.02	0.02	0.01
Langelier Index - 25 degree	None			0.63	0.61	0.81	0.42	0.72	0.71	0.84	0.72	0.66	0.54
Magnesium, Total, ICAP	mg/l			1.7	1.7	3.7	3.7	9.1	8.8	6.7	6.5	11	11
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			1.7	1.6	1.8	1.9	3	2.9	2.9	2.8	2.9	3
Sodium, Total, ICAP	mg/l			64	63	59	59	49	47	49	47	46	45
Sulfate	mg/l	250	s	2	2.2	62	58	57	58	73	74	64	33
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			3.1	2.9	0.8	0.7	0.9	0.8	ND	ND	ND	ND
Carbon Dioxide	mg/l			1.24	1.2	1.37	3.38	2.44	2.37	2.52	3.11	4.36	5.31
General Physicals													
Apparent Color	ACU	15	s	**30**	**30**	5	5	3	3	3	3	3	3
Lab pH	Units			8.5	8.5	8.4	8	8.2	8.2	8.2	8.1	8	7.9
Odor	TON	3	s	**3**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
pH of CaCO3 saturation(25C)	Units			7.874	7.887	7.586	7.584	7.478	7.49	7.359	7.375	7.343	7.365
pH of CaCO3 saturation(60C)	Units			7.4	7.4	7.1	7.1	7	7	6.9	6.9	6.9	6.9
Specific Conductance	umho/cm			360	358	478	475	510	500	541	536	544	535
Metals													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	1.2	1.1	38	40	30	32
Barium, Total, ICAP/MS	ug/l	1000	p	5.3	5.8	13	14	56	58	**160**	**160**	90	92
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	2.9	ND	2.7	ND	2.5	ND	3.1	ND	2.4
Hexavalent Chromium (Cr VI)	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	12	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Downey #1	Downey #1	Downey #1	Downey #1	Downey #1	Downey #1	Downey #1	Downey #1	Downey #1	Downey #1	Downey #1	Downey #1
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4	Zone 5	Zone 5	Zone 6	Zone 6
				5/25/2004	9/22/2004	5/25/2004	9/22/2004	5/25/2004	9/22/2004	5/25/2004	9/22/2004	5/25/2004	9/22/2004	5/25/2004	9/22/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	220	210	390	400	510	500	560	570	420	410	910	940
Cation Sum	meq/l			3.67	3.69	6.15	6.33	7.87	7.96	8.9	9.19	6.92	6.93	15	15.1
Anion Sum	meq/l			3.39	3.4	5.78	5.91	7.59	7.6	8.76	8.52	6.4	6.51	12	14.5
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.013	ND
Manganese, Total, ICAP/MS	ug/l	50	s	ND	ND	ND	ND	ND	ND	ND	3.1	**140**	**110**	**86**	**75**
Turbidity	NTU	5	s	0.2	0.15	0.85	0.45	0.4	0.4	0.25	0.45	3.6	4.6	3.2	0.8
Alkalinity	mg/l			145	145	148	155	151	158	177	183	191	201	273	304
Boron	mg/l			ND	0.064	0.056	0.065	0.071	0.087	0.19	0.22	0.078	0.087	0.23	0.24
Bicarbonate as HCO3,calculated	mg/l			176	176	180	189	184	192	216	223	233	245	333	371
Calcium, Total, ICAP	mg/l			40	41	78	80	100	100	95	99	86	87	170	170
Carbonate as CO3, Calculated	mg/l			1.81	1.14	1.47	0.976	0.95	0.787	0.886	0.577	1.2	0.798	0.684	0.606
Hardness (Total, as CaCO3)	mg/l			123	126	244	253	324	328	315	330	285	287	565	569
Chloride	mg/l	250	s	4.8	4.7	31	31	65	61	75	70	34	33	77	100
Fluoride	mg/l	2	p	0.31	0.3	0.28	0.27	0.33	0.32	0.39	0.39	0.36	0.36	0.29	0.28
Hydroxide as OH, Calculated	mg/l			0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.007	0.01	0.009	0.005	0.004
Langelier Index - 25 degree	None			0.6	0.41	0.8	0.64	0.72	0.64	0.67	0.5	0.76	0.58	0.78	0.76
Magnesium, Total, ICAP	mg/l			5.7	5.8	12	13	18	19	19	20	17	17	34	35
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	1.9	1.8	3	2.9	2.3	2.2	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.8	2.9	3.5	3.5	3.2	3.4	4.2	4.4	3.5	3.6	5.7	5.8
Sodium, Total, ICAP	mg/l			26	25	27	27	30	30	57	57	26	25	82	81
Sulfate	mg/l	250	s	16	17	86	86	120	120	140	130	77	74	210	**270**
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	1.9	1.8	3	2.9	2.3	2.2	ND	ND	ND	ND
Total Organic Carbon	mg/l			ND	ND	ND	ND	ND	ND	0.6	ND	ND	ND	0.71	0.7
Carbon Dioxide	mg/l			2.22	3.52	2.86	4.76	4.63	6.09	6.85	11.2	5.87	9.78	21.1	29.5
General Physicals															
Apparent Color	ACU	15	s	3	ND	ND	ND	3	3	3	3	5	3	ND	3
Lab pH	Units			8.2	8	8.1	7.9	7.9	7.8	7.8	7.6	7.9	7.7	7.5	7.4
Odor	TON	3	s	1	1	1	1	2	2	1	**3**	2	2	2	**4**
pH of CaCO3 saturation(25C)	Units			7.597	7.587	7.298	7.265	7.18	7.162	7.133	7.101	7.143	7.116	6.718	6.645
pH of CaCO3 saturation(60C)	Units			7.2	7.1	6.9	6.8	6.7	6.7	6.7	6.7	6.7	6.7	6.3	6.2
Specific Conductance	umho/cm			342	336	590	592	766	759	861	854	654	630	1290	1340
Metals															
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	2.9	3	2.5	2.4	3.1	3.4	2	2	4.3	4.4	2.7	3
Barium, Total, ICAP/MS	ug/l	1000	p	97	94	**160**	**160**	**140**	**140**	95	94	**240**	**210**	70	66
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	3.3	4.9	1.9	3.7	1.3	3.6	ND	4.1	ND	5.8	ND	12
Hexavalent Chromium (Cr VI)	mg/l														
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	5.3	ND	ND	6.3	8.9
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	0.97	0.8	2.09	1.6
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	0.79	0.6	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.84	4.4
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p												

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Huntington Park #1	Huntington Park #1	Huntington Park #1	Huntington Park #1	Huntington Park #1	Huntington Park #1	Huntington Park #1	Huntington Park #1
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4
				4/28/2004	9/24/2004	4/28/2004	9/24/2004	4/28/2004	9/24/2004	4/28/2004	9/24/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	360	370	370	370	600	620	690	700
Cation Sum	meq/l			6.16	6.11	6.21	6.3	9.63	10.4	11.7	11.8
Anion Sum	meq/l			5.82	4.63	5.86	5.81	9.73	9.83	11.3	11.3
Iron, Total, ICAP	mg/l	0.3	s	ND	0.2	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	44	**60**	2.8	3.5	ND	ND	ND	ND
Turbidity	NTU	5	s	0.7	0.65	0.35	0.5	0.1	0.1	0.1	0.35
Alkalinity	mg/l			174	169	178	170	220	223	269	257
Boron	mg/l			0.14	0.15	0.14	0.16	0.18	0.2	0.18	0.19
Bicarbonate as HCO3,calculated	mg/l			212	206	217	207	268	271	328	313
Calcium, Total, ICAP	mg/l			62	61	63	63	100	110	130	130
Carbonate as CO3, Calculated	mg/l			1.09	0.845	1.41	1.69	1.1	2.79	1.34	1.02
Hardness (Total, as CaCO3)	mg/l			217	214	219	219	361	390	456	456
Chloride	mg/l	250	s	20	11	20	21	54	57	63	65
Fluoride	mg/l	2	p	0.49	0.51	0.44	0.44	0.37	0.36	0.37	0.37
Hydroxide as OH, Calculated	mg/l			0.01	0.01	0.02	0.02	0.01	0.03	0.01	0.009
Langelier Index - 25 degree	None			0.57	0.45	0.69	0.77	0.78	1.2	0.98	0.86
Magnesium, Total, ICAP	mg/l			15	15	15	15	27	28	32	32
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	6.3	5.8	4.8	4.9
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			3.3	3.4	3.2	3.4	4	4.6	4.5	4.6
Sodium, Total, ICAP	mg/l			40	40	40	42	53	56	57	58
Sulfate	mg/l	250	s	84	44	82	86	160	160	180	190
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	6.3	5.8	4.8	4.9
Total Organic Carbon	mg/l			ND	ND	ND	ND	0.7	ND	0.6	ND
Carbon Dioxide	mg/l			5.34	6.53	4.34	3.29	8.5	3.42	10.4	12.5
General Physicals											
Apparent Color	ACU	15	s	3	3	3	ND	ND	ND	3	3
Lab pH	Units			7.9	7.8	8	8.1	7.8	8.2	7.8	7.7
Odor	TON	3	s	1	2	1	1	1	2	1	2
pH of CaCO3 saturation(25C)	Units			7.326	7.346	7.309	7.33	7.017	6.971	6.815	6.836
pH of CaCO3 saturation(60C)	Units			6.9	6.9	6.9	6.9	6.6	6.5	6.4	6.4
Specific Conductance	umho/cm			561	576	565	579	897	945	1030	1040
Metals											
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	1.2	ND	ND	ND	ND	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	53	62	66	76	**100**	**120**	89	99
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	1.7	2.9	2.4	3.4	23	11	4.4	6.7
Hexavalent Chromium (Cr VI)	mg/l										
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	6.2	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	6.4	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5	p	ND	ND		ND	**27**	**14**	0.8	0.6
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND		ND	0.79	2.8	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND		ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND		ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND		ND	**24**	**10**	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND		ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND		ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND		ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND		ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND		ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND		ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND		ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND		ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND		ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND		ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND		ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p								

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Inglewood #2 Zone 1 3/10/2004	Inglewood #2 Zone 1 9/1/2004	Inglewood #2 Zone 2 3/10/2004	Inglewood #2 Zone 2 9/1/2004	Inglewood #2 Zone 3 3/10/2004	Inglewood #2 Zone 3 9/1/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	**1690**	**1670**	**1550**	**1510**	310	300
Cation Sum	meq/l			28.1	28.5	25.3	25.8	5.42	5.41
Anion Sum	meq/l			22.5	27.4	19.8	25.1	4.9	4.96
Iron, Total, ICAP	mg/l	0.3	s	**0.6**	**0.59**	**0.48**	**0.52**	0.17	0.14
Manganese, Total, ICAP/MS	ug/l	50	s	35	35	48	**53**	49	46
Turbidity	NTU	5	s	**6.2**	2.1	**38**	**12**	2.1	1.7
Alkalinity	mg/l			1081	1330	961	1230	219	222
Boron	mg/l			3.9	4.1	3.4	3.3	0.2	0.23
Bicarbonate as HCO3,calculated	mg/l			1320	1610	1170	1490	267	270
Calcium, Total, ICAP	mg/l			17	17	12	12	33	32
Carbonate as CO3, Calculated	mg/l			8.58	26.3	6.04	24.3	1.38	1.39
Hardness (Total, as CaCO3)	mg/l			112	112	68.7	68.3	132	129
Chloride	mg/l	250	s	30	28	20	18	18	18
Fluoride	mg/l	2	p	0.53	0.57	0.29	0.3	0.23	0.23
Hydroxide as OH, Calculated	mg/l			0.02	0.04	0.01	0.04	0.01	0.01
Langelier Index - 25 degree	None			0.91	1.4	0.6	1.2	0.4	0.39
Magnesium, Total, ICAP	mg/l			17	17	9.4	9.3	12	12
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			25	25	19	19	6.7	6.6
Sodium, Total, ICAP	mg/l			580	590	540	550	60	61
Sulfate	mg/l	250	s	ND	ND	ND	ND	ND	ND
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			40.3	34	23.1	21	1.2	1.3
Carbon Dioxide	mg/l			26.4	12.8	29.5	11.9	6.72	6.8
General Physicals									
Apparent Color	ACU	15	s	**350**	**350**	**200**	**300**	**15**	**15**
Lab pH	Units			8	8.4	7.9	8.4	7.9	7.9
Odor	TON	3	s	**17**	**17**	**17**	**8**	**8**	**17**
pH of CaCO3 saturation(25C)	Units			7.094	7.008	7.298	7.193	7.5	7.508
pH of CaCO3 saturation(60C)	Units			6.6	6.6	6.9	6.7	7.1	7.1
Specific Conductance	umho/cm			2480	2440	2260	2250	478	481
Metals									
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	2.3	ND	ND	ND	1	ND
Barium, Total, ICAP/MS	ug/l	1000	p	42	45	23	24	14	15
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	2.4	ND	1.5	ND	4.1	ND
Hexavalent Chromium (Cr VI)	mg/l								
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	6.5	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	6.2	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	12	ND	7.4	ND	ND	5.4
Volatile Organic Compounds									
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p						

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Lakewood #1	Lakewood #1	Lakewood #1	Lakewood #1	Lakewood #1	Lakewood #1	Lakewood #1	Lakewood #1	Lakewood #1	Lakewood #1	Lakewood #1	Lakewood #1
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4	Zone 5	Zone 5	Zone 6	Zone 6
				5/24/2004	9/20/2004	5/24/2004	9/20/2004	5/24/2004	9/20/2004	5/24/2004	9/20/2004	5/24/2004	9/20/2004	5/24/2004	9/20/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	180	170	200	190	220	220	310	310	240	240	430	420
Cation Sum	meq/l			2.79	2.88	3.33	3.69	3.77	3.82	5.37	5.45	4.21	4.2	7.45	7.05
Anion Sum	meq/l			2.72	2.8	3.07	3.15	3.47	3.62	5.13	5.33	4.44	3.82	6.35	6.83
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	0.011	ND	0.019	ND	0.1	0.1	0.097	0.1	0.11	0.11
Manganese, Total, ICAP/MS	ug/l	50	s	4.8	3.6	17	16	24	23	**145**	**130**	49	49	**265**	**240**
Turbidity	NTU	5	s	0.45	0.2	0.25	0.45	3.1	1.7	1	1.2	0.35	0.25	0.7	0.45
Alkalinity	mg/l			91.2	90.2	129	130	146	150	156	154	193	161	162	189
Boron	mg/l			0.054	0.061	ND	ND	0.067	0.067	0.065	0.074	0.08	0.088	0.084	0.081
Bicarbonate as HCO3,calculated	mg/l			109	108	156	158	177	182	190	187	234	196	197	230
Calcium, Total, ICAP	mg/l			10	10	33	36	40	40	61	62	47	46	98	91
Carbonate as CO3, Calculated	mg/l			4.47	4.43	2.55	2.58	2.3	2.97	1.55	2.42	2.41	2.02	1.28	1.88
Hardness (Total, as CaCO3)	mg/l			26.4	26.4	98.9	108	120	120	184	188	153	150	285	265
Chloride	mg/l	250	s	19	21	6	6.4	8	8.8	58	65	9.5	10	75	70
Fluoride	mg/l	2	p	0.44	0.46	0.25	0.24	0.3	0.29	0.31	0.3	0.47	0.5	0.21	0.21
Hydroxide as OH, Calculated	mg/l			0.1	0.1	0.04	0.04	0.03	0.04	0.02	0.03	0.03	0.03	0.02	0.02
Langelier Index - 25 degree	None			0.39	0.39	0.67	0.71	0.71	0.82	0.72	0.92	0.8	0.71	0.84	0.98
Magnesium, Total, ICAP	mg/l			0.35	0.35	4	4.3	5	5	7.7	8	8.6	8.5	9.8	9.1
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			ND	ND	2	2.2	2.3	2.3	2.9	3.1	2.5	2.6	3.7	3.7
Sodium, Total, ICAP	mg/l			52	54	30	34	30	31	37	37	25	26	38	38
Sulfate	mg/l	250	s	16	18	15	17	15	17	17	19	14	14	47	51
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	0.116	0.12	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			0.9	0.8	ND	ND	ND	ND	0.7	0.8	ND	ND	0.7	0.6
Carbon Dioxide	mg/l			0.346	0.342	1.24	1.26	1.77	1.45	3.02	1.87	2.95	2.47	3.94	3.65
General Physicals															
Apparent Color	ACU	15	s	**15**	**15**	3	5	5	3	3	3	5	3	3	3
Lab pH	Units			8.8	8.8	8.4	8.4	8.3	8.4	8.1	8.3	8.2	8.2	8	8.1
Odor	TON	3	s	**8**	1	**4**	2	**4**	2	**8**	**3**	**8**	**4**	**8**	2
pH of CaCO3 saturation(25C)	Units			8.408	8.412	7.733	7.69	7.595	7.583	7.381	7.381	7.404	7.49	7.159	7.124
pH of CaCO3 saturation(60C)	Units			8	8	7.3	7.2	7.2	7.1	6.9	6.9	7	7	6.7	6.7
Specific Conductance	umho/cm			285	290	312	318	351	359	533	549	392	394	718	686
Metals															
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	12	11	1.5	1.3	1.1	ND	13	13	4	3.9	26	24
Barium, Total, ICAP/MS	ug/l	1000	p	16	16	21	21	28	29	**140**	**150**	99	**100**	**265**	**260**
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	2.4	ND	3.1	ND	3.4	ND	4.1	ND	4.5	ND	5.2
Hexavalent Chromium (Cr VI)	mg/l														
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	6.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p												

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	La Mirada #1 Zone 1 5/5/2004	La Mirada #1 Zone 1 9/14/2004	La Mirada #1 Zone 2 5/5/2004	La Mirada #1 Zone 2 9/14/2004	La Mirada #1 Zone 3 5/5/2004	La Mirada #1 Zone 3 9/14/2004	La Mirada #1 Zone 4 5/5/2004	La Mirada #1 Zone 4 9/14/2004	La Mirada #1 Zone 5 5/5/2004	La Mirada #1 Zone 5 9/14/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	370	390	260	260	330	320	480	470	470	580
Cation Sum	meq/l			5.93	5.91	4.3	4.19	5.66	5.47	8.4	8.22	8.04	9.24
Anion Sum	meq/l			5.94	5.62	4.08	4.06	5.36	5.13	8	8.15	8.05	9.39
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	10	12	4.4	6.3	19	19	21	35	34	18
Turbidity	NTU	5	s	0.1	0.15	0.4	0.35	0.1	0.1	0.4	0.35	0.1	0.25
Alkalinity	mg/l			154	145	135	128	181	173	197	190	188	175
Boron	mg/l			0.15	0.15	0.11	0.12	0.15	0.15	0.14	0.14	0.15	0.16
Bicarbonate as HCO3,calculated	mg/l			187	175	164	155	220	210	240	231	229	213
Calcium, Total, ICAP	mg/l			16	16	9.9	9.7	22	22	58	57	55	68
Carbonate as CO3, Calculated	mg/l			3.05	3.6	2.68	3.19	2.27	2.72	0.984	1.5	0.939	1.1
Hardness (Total, as CaCO3)	mg/l			54.8	54	32.1	31.2	82.1	83.3	235	229	216	265
Chloride	mg/l	250	s	27	24	14	15	16	15	60	63	64	120
Fluoride	mg/l	2	p	0.77	0.78	0.57	0.59	0.75	0.74	0.54	0.54	0.5	0.36
Hydroxide as OH, Calculated	mg/l			0.04	0.05	0.04	0.05	0.03	0.03	0.01	0.02	0.01	0.01
Langelier Index - 25 degree	None			0.43	0.5	0.17	0.23	0.44	0.52	0.5	0.67	0.46	0.62
Magnesium, Total, ICAP	mg/l			3.6	3.4	1.8	1.7	6.6	6.9	22	21	19	23
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	0.68	0.69	2.4	5.6
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.1	2	1.7	1.5	2.5	2.3	3	2.8	2.8	2.9
Sodium, Total, ICAP	mg/l			110	110	83	81	91	86	83	82	84	89
Sulfate	mg/l	250	s	99	96	46	50	60	58	110	120	110	100
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	0.68	0.69	2.4	5.6
Total Organic Carbon	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Dioxide	mg/l			1.49	1.11	1.31	0.98	2.78	2.1	7.61	4.62	7.26	5.36
General Physicals													
Apparent Color	ACU	15	s	ND	5	ND	3	3	ND	3	3	ND	3
Lab pH	Units			8.4	8.5	8.4	8.5	8.2	8.3	7.8	8	7.8	7.9
Odor	TON	3	s	1	2	2	1	1	2	1	2	1	2
pH of CaCO3 saturation(25C)	Units			7.969	7.998	8.235	8.268	7.76	7.78	7.301	7.326	7.345	7.284
pH of CaCO3 saturation(60C)	Units			7.5	7.6	7.8	7.8	7.3	7.3	6.9	6.9	6.9	6.8
Specific Conductance	umho/cm			599	592	414	424	523	530	772	792	758	909
Metals													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	6.1	6.1	6.9	6.8	7	6.8	3.2	4.5	1.8	1.3
Barium, Total, ICAP/MS	ug/l	1000	p	51	49	25	25	41	37	51	51	47	58
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	1.5	ND	1.7	1.5
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	5.3	5.3	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p										

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Long Beach #1	Long Beach #1	Long Beach #1	Long Beach #1	Long Beach #1	Long Beach #1	Long Beach #1	Long Beach #1	Long Beach #1	Long Beach #1
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 4	Zone 4	Zone 5	Zone 6	Zone 6
				4/19/2004	9/14/2004	4/19/2004	9/14/2004	4/19/2004	4/19/2004	9/15/2004	4/19/2004	4/19/2004	9/15/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	230	240	220	240	180	230	250	**1240**	890	970
Cation Sum	meq/l			3.75	3.66	3.63	3.67	3.12	3.81	3.7	19.6	14.6	15.3
Anion Sum	meq/l			3.5	3.54	3.45	3.5	2.91	3.57	3.66	20.9	14.4	16.4
Iron, Total, ICAP	mg/l	0.3	s	0.02	0.02	0.018	0.021	ND	ND	ND	0.038	0.12	0.14
Manganese, Total, ICAP/MS	ug/l	50	s	2.6	3	ND	3.7	3.5	19	23	**130**	**330**	**370**
Turbidity	NTU	5	s	0.6	0.3	0.25	0.6	1.1	**5.4**	**10**	1.8	**9.9**	0.7
Alkalinity	mg/l			155	154	151	152	117	133	133	143	211	215
Boron	mg/l			0.23	0.2	0.22	0.2	0.092	0.082	0.071	0.096	0.096	0.097
Bicarbonate as HCO3,calculated	mg/l			183	182	178	181	140	161	161	174	257	262
Calcium, Total, ICAP	mg/l			2.5	2.4	2.7	2.7	5.3	20	19	130	170	180
Carbonate as CO3, Calculated	mg/l			15	14.9	14.6	11.8	7.23	3.31	3.31	1.13	1.33	1.7
Hardness (Total, as CaCO3)	mg/l			7.19	6.86	7.36	7.32	14.6	58.2	55.3	407	544	573
Chloride	mg/l	250	s	13	15	14	15	10	11	12	**410**	170	200
Fluoride	mg/l	2	p	0.63	0.64	0.62	0.64	0.63	0.4	0.38	0.18	0.28	0.25
Hydroxide as OH, Calculated	mg/l			0.2	0.2	0.2	0.2	0.1	0.05	0.05	0.02	0.01	0.02
Langelier Index - 25 degree	None			0.31	0.29	0.34	0.24	0.33	0.56	0.54	0.91	1.1	1.2
Magnesium, Total, ICAP	mg/l			0.23	0.21	0.15	0.14	0.32	2	1.9	20	29	30
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			ND	ND	ND	ND	ND	1.4	1.2	4.6	3.9	3.8
Sodium, Total, ICAP	mg/l			83	81	80	81	65	60	59	260	82	85
Sulfate	mg/l	250	s	ND	ND	ND	ND	12	28	31	**310**	**260**	**310**
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			4.1	2.7	3	4.2	1.5	0.6	ND	1.2	1.3	1.3
Carbon Dioxide	mg/l			0.291	0.289	0.283	0.362	0.352	1.02	1.02	3.48	6.47	5.24
General Physicals													
Apparent Color	ACU	15	s	**80**	**80**	**100**	**80**	**40**	10	10	5	5	5
Lab pH	Units			9.1	9.1	9.1	9	8.9	8.5	8.5	8	7.9	8
Odor	TON	3	s	**4**	**3**	**8**	**4**	**8**	**4**	**4**	**4**	**4**	**4**
pH of CaCO3 saturation(25C)	Units			8.785	8.805	8.763	8.756	8.575	7.937	7.959	7.091	6.805	6.771
pH of CaCO3 saturation(60C)	Units			8.3	8.4	8.3	8.3	8.1	7.5	7.5	6.6	6.4	6.3
Specific Conductance	umho/cm			355	341	346	339	303	361	364	2030	1380	1430
Metals													
Aluminum, Total, ICAP/MS	ug/l	1000	p	32	26	ND	25	ND	ND	26	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	1.9	8.7	9.8
Barium, Total, ICAP/MS	ug/l	1000	p	ND	2.3	ND	2.4	ND	5.7	6.9	89	**260**	**290**
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	4.8	ND	1.6	1.1	2	3	2.1
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	5.2	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Perchlorate	ug/l	6	p										

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Long Beach #2	Long Beach #2	Long Beach #2	Long Beach #2	Long Beach #2	Long Beach #2	Long Beach #2	Long Beach #2	Long Beach #2	Long Beach #2	Long Beach #2	Long Beach #2
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4	Zone 5	Zone 5	Zone 6	Zone 6
				5/12/2004	9/16/2004	3/9/2004	8/26/2004	5/12/2004	9/16/2004	5/12/2004	9/16/2004	5/12/2004	9/16/2004	5/12/2004	9/16/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	410	430	280	300	240	240	280	280	**1000**	**1000**	**1180**	**1150**
Cation Sum	meq/l			7.53	7.07	4.65	4.46	3.98	4.02	4.72	4.77	15.5	16.5	18.5	18.5
Anion Sum	meq/l			6.72	6.52	4.44	4.14	3.82	3.82	4.51	4.62	15.7	16.3	18.6	18.4
Iron, Total, ICAP	mg/l	0.3	s	0.1	0.2	0.031	0.027	ND	ND	ND	ND	0.15	0.17	0.18	0.19
Manganese, Total, ICAP/MS	ug/l	50	s	14	18	31	20	8.9	9.2	28	30	**150**	**160**	**310**	**310**
Turbidity	NTU	5	s	1.8	2.5	0.4	0.45	0.4	0.3	2.3	1.2	0.85	1.3	1.5	4.9
Alkalinity	mg/l			306	295	192	182	137	133	143	138	307	300	298	283
Boron	mg/l			0.6	0.56	0.21	0.19	0.14	0.14	0.09	0.1	0.28	0.3	0.36	0.36
Bicarbonate as HCO3,calculated	mg/l			371	357	233	221	166	160	174	167	374	365	363	345
Calcium, Total, ICAP	mg/l			7.5	7.2	14	14	14	14	38	38	170	180	200	200
Carbonate as CO3, Calculated	mg/l			4.81	7.34	3.02	2.28	3.41	4.14	2.26	2.73	1.53	1.88	1.18	1.78
Hardness (Total, as CaCO3)	mg/l			25.3	24.2	42.8	42.4	40.7	40.7	113	113	527	557	635	635
Chloride	mg/l	250	s	20	21	19	17	21	24	27	32	110	120	160	170
Fluoride	mg/l	2	p	0.6	0.61	0.35	0.37	0.51	0.52	0.32	0.3	0.16	0.14	0.3	0.29
Hydroxide as OH, Calculated	mg/l			0.03	0.05	0.03	0.03	0.05	0.07	0.03	0.04	0.01	0.01	0.009	0.01
Langelier Index - 25 degree	None			0.3	0.46	0.37	0.25	0.42	0.5	0.68	0.76	1.2	1.3	1.1	1.3
Magnesium, Total, ICAP	mg/l			1.6	1.5	1.9	1.8	1.4	1.4	4.4	4.4	25	26	33	33
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.7	2.6	2.1	1.9	1.4	1.4	2.6	2.7	4.8	5.2	6.1	6.3
Sodium, Total, ICAP	mg/l			160	150	86	82	72	73	55	56	110	120	130	130
Sulfate	mg/l	250	s	ND	ND	2.1	ND	22	22	42	45	**310**	**330**	**390**	**380**
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	0.094	ND	0.099	0.058	0.154	0.101
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			14.3	11	3.6	3.9	1.3	1.3	1.2	1.1	1.3	1.3	1.4	1.4
Carbon Dioxide	mg/l			3.72	2.26	2.34	2.79	1.05	0.804	1.74	1.33	11.9	9.19	14.5	8.69
General Physicals															
Apparent Color	ACU	15	s	**300**	**500**	**35**	**35**	**20**	**20**	5	5	5	5	5	5
Lab pH	Units			8.3	8.5	8.3	8.2	8.5	8.6	8.3	8.4	7.8	7.9	7.7	7.9
Odor	TON	3	s	**17**	**4**	**17**	**8**	**8**	2	**8**	**3**	**8**	2	**17**	**4**
pH of CaCO3 saturation(25C)	Units			8.001	8.035	7.932	7.954	8.079	8.095	7.625	7.642	6.642	6.627	6.584	6.606
pH of CaCO3 saturation(60C)	Units			7.6	7.6	7.5	7.5	7.6	7.7	7.2	7.2	6.2	6.2	6.1	6.2
Specific Conductance	umho/cm			645	658	426	436	390	400	460	476	1440	1470	1670	1710
Metals															
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	1.6	1.2	ND	ND	1.4	1.5	5.2	5	7.7	7.6
Barium, Total, ICAP/MS	ug/l	1000	p	6.1	9	10	9	5.6	5.8	20	22	82	88	83	89
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	3.6	ND	2.2	3.5	2.2	2.9	5.4	8.6	5.6	8.7
Hexavalent Chromium (Cr VI)	mg/l														
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.9	ND	9.3
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.8	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	6.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p	ND				ND		ND		ND		ND	

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Long Beach #6 Zone 1 5/13/2004	Long Beach #6 Zone 1 9/16/2004	Long Beach #6 Zone 2 5/13/2004	Long Beach #6 Zone 2 9/16/2004	Long Beach #6 Zone 3 5/13/2004	Long Beach #6 Zone 3 9/16/2004	Long Beach #6 Zone 4 5/13/2004	Long Beach #6 Zone 4 9/16/2004	Long Beach #6 Zone 5 5/13/2004	Long Beach #6 Zone 5 9/16/2004	Long Beach #6 Zone 6 5/13/2004	Long Beach #6 Zone 6 9/16/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	690	710	510	690	220	240	260	240	190	190	240	250
Cation Sum	meq/l			11.9	11.9	8.69	11.5	3.88	3.92	4.36	3.91	3.34	3.15	4.36	4.22
Anion Sum	meq/l			11.2	11	8.19	10.8	3.62	3.55	3.95	3.63	3.1	3.03	4.03	3.9
Iron, Total, ICAP	mg/l	0.3	s	0.097	0.092	0.094	0.11	0.035	0.038	0.046	0.032	0.011	ND	0.14	0.16
Manganese, Total, ICAP/MS	ug/l	50	s	ND	11	22	31	ND	5.9	30	27	14	9.5	**110**	**110**
Turbidity	NTU	5	s	3.2	2.7	1.4	2.2	0.85	0.65	1	1.2	0.3	0.2	0.7	0.6
Alkalinity	mg/l			535	520	384	509	158	152	172	150	120	112	132	124
Boron	mg/l			1.2	1.2	0.84	1.2	0.29	0.26	0.27	0.21	0.1	0.089	0.076	ND
Bicarbonate as HCO3,calculated	mg/l			650	630	465	616	189	182	208	180	145	135	160	151
Calcium, Total, ICAP	mg/l			8.4	8.2	6.1	8.5	4.8	4.8	6	6	13	13	36	35
Carbonate as CO3, Calculated	mg/l			8.43	12.9	9.56	12.7	9.76	7.46	3.4	7.38	3.75	4.4	1.31	1.24
Hardness (Total, as CaCO3)	mg/l			28	27.1	19.8	27.8	13.5	13.3	17.8	17.2	37	36.2	110	108
Chloride	mg/l	250	s	17	19	17	19	15	17	17	18	15	19	38	39
Fluoride	mg/l	2	p	0.7	0.71	0.66	0.7	0.62	0.64	0.61	0.66	0.49	0.53	0.2	0.18
Hydroxide as OH, Calculated	mg/l			0.03	0.05	0.05	0.05	0.1	0.1	0.04	0.1	0.07	0.09	0.02	0.02
Langelier Index - 25 degree	None			0.59	0.77	0.51	0.77	0.41	0.3	0.051	0.39	0.43	0.5	0.42	0.38
Magnesium, Total, ICAP	mg/l			1.7	1.6	1.1	1.6	0.36	0.31	0.69	0.55	1.1	0.92	5	4.9
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			1.9	1.9	1.5	1.9	ND	ND	ND	ND	1.2	1.1	2.5	2.5
Sodium, Total, ICAP	mg/l			260	260	190	250	83	84	92	82	59	55	48	46
Sulfate	mg/l	250	s	ND	ND	ND	ND	ND	ND	ND	4	12	11	15	15
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			22.2	18.8	19	18	6.7	6.4	8.6	5.6	1.3	1.5	0.7	ND
Carbon Dioxide	mg/l			6.52	3.98	2.94	3.9	0.476	0.577	1.66	0.571	0.728	0.539	2.54	2.4
General Physicals															
Apparent Color	ACU	15	s	**300**	**350**	**300**	**400**	**100**	**125**	**150**	**125**	**20**	**35**	3	3
Lab pH	Units			8.3	8.5	8.5	8.5	8.9	8.8	8.4	8.8	8.6	8.7	8.1	8.1
Odor	TON	3	s	**8**	**3**	**8**	**3**	**3**	2	**4**	2	**4**	2	**4**	2
pH of CaCO3 saturation(25C)	Units			7.708	7.732	7.992	7.726	8.487	8.504	8.349	8.412	8.17	8.201	7.685	7.722
pH of CaCO3 saturation(60C)	Units			7.3	7.3	7.5	7.3	8	8.1	7.9	8	7.7	7.8	7.2	7.3
Specific Conductance	umho/cm			1030	1010	763	995	345	343	388	353	307	301	405	409
Metals															
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	2.9	3	ND	1.6	ND	ND	1.5	ND	ND	ND	5.5	6
Barium, Total, ICAP/MS	ug/l	1000	p	ND	8.1	ND	14	ND	4.2	ND	8	5.9	5.3	10	11
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	2.4	3.7	1.9	4.1
Hexavalent Chromium (Cr VI)	mg/l			ND		ND		ND		ND		ND		ND	
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	6.1	ND	ND	ND	ND	27	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p	ND		ND		ND		ND		ND		ND	

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Los Angeles #1 Zone 1 5/3/2004	Los Angeles #1 Zone 1 9/28/2004	Los Angeles #1 Zone 2 5/3/2004	Los Angeles #1 Zone 2 9/28/2004	Los Angeles #1 Zone 3 5/3/2004	Los Angeles #1 Zone 3 9/28/2004	Los Angeles #1 Zone 4 5/3/2004	Los Angeles #1 Zone 4 9/28/2004	Los Angeles #1 Zone 5 5/3/2004	Los Angeles #1 Zone 5 9/28/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	340	360	360	370	360	380	490	520	650	670
Cation Sum	meq/l			5.66	5.66	6.15	6.02	6.11	6.11	8.29	8.16	10.3	10.4
Anion Sum	meq/l			5.6	5.46	5.84	5.83	6.01	5.8	8.15	7.65	10.5	10.8
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	0.21	0.2	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	49	46	**64**	**58**	19	21	ND	ND	ND	ND
Turbidity	NTU	5	s	0.1	ND	0.75	0.8	0.1	0.1	0.5	0.2	0.2	0.1
Alkalinity	mg/l			173	170	178	173	179	171	196	188	217	210
Boron	mg/l			0.17	0.17	0.16	0.18	0.17	0.17	0.18	0.17	0.22	0.21
Bicarbonate as HCO3,calculated	mg/l			210	206	217	211	218	208	239	229	265	256
Calcium, Total, ICAP	mg/l			54	53	59	59	61	60	85	84	110	110
Carbonate as CO3, Calculated	mg/l			1.72	3.36	0.561	0.687	0.71	1.35	0.491	0.746	0.545	0.662
Hardness (Total, as CaCO3)	mg/l			184	182	209	205	214	212	303	296	390	390
Chloride	mg/l	250	s	22	20	20	21	22	21	49	45	83	88
Fluoride	mg/l	2	p	0.3	0.27	0.46	0.46	0.4	0.37	0.45	0.43	0.43	0.4
Hydroxide as OH, Calculated	mg/l			0.02	0.04	0.007	0.009	0.009	0.02	0.005	0.009	0.005	0.007
Langelier Index - 25 degree	None			0.71	0.99	0.26	0.35	0.38	0.65	0.36	0.54	0.52	0.6
Magnesium, Total, ICAP	mg/l			12	12	15	14	15	15	22	21	28	28
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	4.5	4.3	**13**	**14**
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	0.47	ND	ND	ND
Potassium, Total, ICAP	mg/l			4	4.1	3.7	3.7	3.5	3.5	4	4	4.2	4.5
Sodium, Total, ICAP	mg/l			43	44	43	42	40	41	49	49	55	56
Sulfate	mg/l	250	s	72	71	81	84	86	85	120	110	140	150
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	4.97	4.3	**13**	**14**
Total Organic Carbon	mg/l			ND	0.5	ND	ND	ND	ND	ND	ND	0.5	0.5
Carbon Dioxide	mg/l			3.34	1.64	10.9	8.42	8.7	4.16	15.1	9.14	16.8	12.9
General Physicals													
Apparent Color	ACU	15	s	3	3	3	3	3	ND	3	3	5	**15**
Lab pH	Units			8.1	8.4	7.6	7.7	7.7	8	7.5	7.7	7.5	7.6
Odor	TON	3	s	2	1	2	**3**	1	1	1	1	1	2
pH of CaCO3 saturation(25C)	Units			7.39	7.407	7.338	7.35	7.321	7.349	7.137	7.161	6.98	6.995
pH of CaCO3 saturation(60C)	Units			6.9	7	6.9	6.9	6.9	6.9	6.7	6.7	6.5	6.6
Specific Conductance	umho/cm			549	538	581	579	588	579	789	780	1010	1010
Metals													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	1.2	1.1	1.7	1.6	1.2	1.2
Barium, Total, ICAP/MS	ug/l	1000	p	28	28	45	45	62	63	**100**	**100**	**150**	**150**
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	35	38	**420**	**420**
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	0.75	ND	ND	ND	0.54	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	19	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	**12**	**13**	**26**	**31**
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	0.8	0.7	1.6	1.7
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.5**
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.6**
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p										

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Monte-bello #1	Monte-bello #1	Monte-bello #1	Monte-bello #1	Monte-bello #1	Monte-bello #1	Monte-bello #1	Monte-bello #1	Monte-bello #1	Monte-bello #1
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4	Zone 5	Zone 5
				5/10/2004	9/22/2004	5/10/2004	9/22/2004	5/10/2004	9/22/2004	5/10/2004	9/22/2004	5/10/2004	9/22/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	**2160**	**2160**	900	900	590	630	540	520	500	510
Cation Sum	meq/l			36.1	37	15.1	16.1	9.62	10.4	8.53	8.59	8.1	8
Anion Sum	meq/l			38.1	34.7	15	14.6	9.7	9.97	8.78	7.86	8.16	7.32
Iron, Total, ICAP	mg/l	0.3	s	0.15	0.15	0.19	0.21	0.17	0.14	0.085	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	9.3	10	33	37	**170**	**140**	**88**	**58**	ND	ND
Turbidity	NTU	5	s	0.6	4	2.2	3.8	**26**	**5.6**	0.3	0.6	0.15	0.1
Alkalinity	mg/l			875	843	565	559	195	214	187	180	168	162
Boron	mg/l			6.3	6.8	2.3	2.4	0.35	0.53	0.17	0.23	0.23	0.23
Bicarbonate as HCO3,calculated	mg/l			1060	1020	687	679	238	260	228	219	205	197
Calcium, Total, ICAP	mg/l			13	13	18	19	89	86	100	93	80	79
Carbonate as CO3, Calculated	mg/l			10.9	13.2	5.62	8.8	0.976	1.69	1.18	1.13	0.53	0.51
Hardness (Total, as CaCO3)	mg/l			57.2	57.2	76.2	80	288	277	320	298	266	263
Chloride	mg/l	250	s	**730**	**630**	130	120	87	98	75	62	70	60
Fluoride	mg/l	2	p	0.47	0.45	0.32	0.31	0.19	0.18	0.19	0.24	0.4	0.39
Hydroxide as OH, Calculated	mg/l			0.03	0.03	0.02	0.03	0.01	0.02	0.01	0.01	0.007	0.007
Langelier Index - 25 degree	None			0.89	0.98	0.75	0.97	0.68	0.9	0.81	0.76	0.37	0.35
Magnesium, Total, ICAP	mg/l			6	6	7.6	7.9	16	15	17	16	16	16
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	4.3	4
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			7.9	8.6	5.6	6.1	4.3	4.3	3.6	3.8	3.3	3.3
Sodium, Total, ICAP	mg/l			800	820	310	330	86	110	47	58	62	61
Sulfate	mg/l	250	s	ND	ND	ND	ND	160	140	140	120	120	100
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	4.3	4
Total Organic Carbon	mg/l			38.1	28.8	23.6	21.9	1.8	2.6	1.6	1.3	0.6	ND
Carbon Dioxide	mg/l			13.4	10.2	10.9	6.81	7.54	5.2	5.74	5.51	10.3	9.9
General Physicals													
Apparent Color	ACU	15	s	**350**	**350**	**250**	**300**	**15**	**25**	10	10	3	3
Lab pH	Units			8.2	8.3	8.1	8.3	7.8	8	7.9	7.9	7.6	7.6
Odor	TON	3	s	**8**	**4**	**8**	2	**8**	**4**	**8**	2	**8**	2
pH of CaCO3 saturation(25C)	Units			7.306	7.322	7.353	7.334	7.119	7.096	7.087	7.136	7.23	7.253
pH of CaCO3 saturation(60C)	Units			6.9	6.9	6.9	6.9	6.7	6.7	6.6	6.7	6.8	6.8
Specific Conductance	umho/cm			3610	3530	1440	1410	927	996	846	810	792	766
Metals													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	3.1	3.4	ND	ND	ND	ND	ND	1.9	1.7	1.6
Barium, Total, ICAP/MS	ug/l	1000	p	34	36	23	25	41	40	71	74	56	58
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	1.7	1.8	1.6	ND	7.8	6.2	8.3	4.7	8.1	4.4
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	5	5.2	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	5.3	6.2	ND	ND	ND	ND	ND	15	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	1.5	0.9
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p										

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	Norwalk #1 Zone 1 5/19/2004	Norwalk #1 Zone 1 9/28/2004	Norwalk #1 Zone 2 5/19/2004	Norwalk #1 Zone 2 9/28/2004	Norwalk #1 Zone 3 5/19/2004	Norwalk #1 Zone 3 9/28/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	490	470	300	320	270	240
Cation Sum	meq/l			8.67	8.13	5.34	5.33	4.68	3.89
Anion Sum	meq/l			7.72	7.61	4.99	4.87	4.36	3.86
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	0.01	ND	0.033	0.023
Manganese, Total, ICAP/MS	ug/l	50	s	4	4.1	6.3	6.2	33	33
Turbidity	NTU	5	s	3.7	0.1	1.1	0.25	**11**	3.8
Alkalinity	mg/l			278	276	165	167	130	112
Boron	mg/l			0.4	0.41	0.2	0.21	0.083	0.063
Bicarbonate as HCO3,calculated	mg/l			338	335	200	202	158	135
Calcium, Total, ICAP	mg/l			13	12	8.4	8.2	19	20
Carbonate as CO3, Calculated	mg/l			3.48	3.45	4.11	5.23	2.05	3.49
Hardness (Total, as CaCO3)	mg/l			60.9	55.5	25.9	25.4	59	61.1
Chloride	mg/l	250	s	72	70	59	53	53	46
Fluoride	mg/l	2	p	0.43	0.43	0.56	0.57	0.25	0.25
Hydroxide as OH, Calculated	mg/l			0.03	0.03	0.05	0.07	0.03	0.07
Langelier Index - 25 degree	None			0.4	0.36	0.28	0.37	0.33	0.59
Magnesium, Total, ICAP	mg/l			6.9	6.2	1.2	1.2	2.8	2.7
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.5	2.5	1.6	1.7	2.4	2.2
Sodium, Total, ICAP	mg/l			170	160	110	110	79	60
Sulfate	mg/l	250	s	5	4.5	ND	ND	12	15
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			2.6	2.5	2.7	2.8	0.8	0.5
Carbon Dioxide	mg/l			4.27	4.23	1.26	1.01	1.58	0.678
General Physicals									
Apparent Color	ACU	15	s	**15**	**30**	**35**	**35**	5	5
Lab pH	Units			8.2	8.2	8.5	8.6	8.3	8.6
Odor	TON	3	s	**200**	**100**	**4**	**3**	**3**	**4**
pH of CaCO3 saturation(25C)	Units			7.802	7.841	8.22	8.226	7.968	8.014
pH of CaCO3 saturation(60C)	Units			7.4	7.4	7.8	7.8	7.5	7.6
Specific Conductance	umho/cm			815	785	526	520	463	398
Metals									
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	**51**	23
Barium, Total, ICAP/MS	ug/l	1000	p	14	14	5.9	6.1	58	56
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND
Hexavalent Chromium (Cr VI)	mg/l			ND	ND	ND	0.2	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds									
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Pico #1 Zone 2 5/25/2004	Pico #1 Zone 2 9/30/2004	Pico #1 Zone 3 5/25/2004	Pico #1 Zone 3 9/30/2004	Pico #1 Zone 4 5/25/2004	Pico #1 Zone 4 9/30/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	330	340	660	620	640	620
Cation Sum	meq/l			5.42	5.7	9.94	10.6	10.2	10.2
Anion Sum	meq/l			5.16	5.44	10.5	8.21	10.2	10
Iron, Total, ICAP	mg/l	0.3	s	0.26	0.27	**0.41**	**0.41**	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	34	29	23	20	2.4	ND
Turbidity	NTU	5	s	1.6	1.4	3.7	2.6	0.3	0.15
Alkalinity	mg/l			154	162	167	179	186	186
Boron	mg/l			0.055	0.086	0.21	0.21	0.18	0.19
Bicarbonate as HCO3,calculated	mg/l			187	197	204	218	227	227
Calcium, Total, ICAP	mg/l			68	71	100	120	110	110
Carbonate as CO3, Calculated	mg/l			0.965	0.808	0.419	0.283	0.587	0.466
Hardness (Total, as CaCO3)	mg/l			219	231	332	386	361	361
Chloride	mg/l	250	s	20	22	120	75	92	96
Fluoride	mg/l	2	p	0.3	0.29	0.24	0.25	0.28	0.27
Hydroxide as OH, Calculated	mg/l			0.01	0.01	0.005	0.003	0.007	0.005
Langelier Index - 25 degree	None			0.56	0.5	0.37	0.27	0.55	0.45
Magnesium, Total, ICAP	mg/l			12	13	20	21	21	21
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	1.1	0.92
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.8	3	4.7	4.8	4.9	5
Sodium, Total, ICAP	mg/l			22	23	73	64	66	65
Sulfate	mg/l	250	s	72	75	180	120	180	170
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	1.1	0.92
Total Organic Carbon	mg/l			ND	ND	0.6	0.6	0.7	0.7
Carbon Dioxide	mg/l			4.71	6.24	12.9	21.9	11.4	14.4
General Physicals									
Apparent Color	ACU	15	s	3	5	5	10	3	ND
Lab pH	Units			7.9	7.8	7.5	7.3	7.6	7.5
Odor	TON	3	s	2	1	2	2	1	2
pH of CaCO3 saturation(25C)	Units			7.341	7.299	7.135	7.027	7.048	7.048
pH of CaCO3 saturation(60C)	Units			6.9	6.9	6.7	6.6	6.6	6.6
Specific Conductance	umho/cm			516	532	993	1010	961	939
Metals									
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	2.7	2.8
Barium, Total, ICAP/MS	ug/l	1000	p	79	72	63	57	65	59
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	2.9	ND	3.8	ND	ND
Hexavalent Chromium (Cr VI)	mg/l								
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	5.3	ND	5
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds									
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p						

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Pico #2 Zone 1 4/22/2004	Pico #2 Zone 1 9/23/2004	Pico #2 Zone 2 4/22/2004	Pico #2 Zone 2 9/23/2004	Pico #2 Zone 3 4/22/2004	Pico #2 Zone 3 9/23/2004	Pico #2 Zone 4 4/22/2004	Pico #2 Zone 4 9/23/2004	Pico #2 Zone 5 4/22/2004	Pico #2 Zone 5 9/23/2004	Pico #2 Zone 6 4/22/2004	Pico #2 Zone 6 9/23/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	490	540	580	600	520	560	530	540	510	530	470	270
Cation Sum	meq/l			8.38	8.33	10.1	10.1	8.49	9.03	8.55	8.74	8.19	8.43	7.59	4.47
Anion Sum	meq/l			8.09	8.29	9.5	9.47	8.21	8.46	8.36	8.51	8.1	8.47	7.47	4.22
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	0.027	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	ND	ND	ND	ND	ND	ND	2.2	ND	29	24	**670**	**340**
Turbidity	NTU	5	s	0.25	0.2	0.15	0.2	0.35	0.25	0.2	0.5	0.2	0.3	0.05	0.3
Alkalinity	mg/l			200	197	222	215	190	185	150	146	142	141	131	87.7
Boron	mg/l			0.061	0.062	0.12	0.13	0.14	0.12	0.25	0.26	0.26	0.29	0.3	0.22
Bicarbonate as HCO3,calculated	mg/l			244	240	270	262	231	225	183	178	173	172	160	107
Calcium, Total, ICAP	mg/l			110	110	130	130	100	110	73	75	65	67	51	25
Carbonate as CO3, Calculated	mg/l			1	0.984	0.879	0.678	0.752	1.46	0.473	0.461	0.356	0.888	0.261	0.439
Hardness (Total, as CaCO3)	mg/l			357	357	428	428	336	361	252	257	236	241	193	93.7
Chloride	mg/l	250	s	41	42	68	67	59	60	94	103	98	108	92	39.6
Fluoride	mg/l	2	p	0.27	0.22	0.27	0.23	0.32	0.3	0.36	0.29	0.37	0.35	0.39	0.47
Hydroxide as OH, Calculated	mg/l			0.01	0.01	0.009	0.007	0.009	0.02	0.007	0.007	0.005	0.01	0.004	0.01
Langelier Index - 25 degree	None			0.78	0.78	0.8	0.69	0.62	0.95	0.28	0.28	0.11	0.52	-0.1	-0.2
Magnesium, Total, ICAP	mg/l			20	20	25	25	21	21	17	17	18	18	16	7.6
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	0.67	0.23	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	3	3.3	3	3.2	3.2	3.4	2.7	2.9	2.6	2.7	3.6	2.1
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.148
Potassium, Total, ICAP	mg/l			4	3.8	4	4	4.1	4.1	4.2	4.3	4.5	4.6	6.2	4.4
Sodium, Total, ICAP	mg/l			26	25	33	33	38	39	78	80	77	80	82	57
Sulfate	mg/l	250	s	130	140	140	146	120	135	120	118	110	115	95	56.5
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	3	3.3	3	3.2	3.2	3.4	2.7	2.9	2.6	2.7	3.6	5.7
Total Organic Carbon	mg/l			ND	ND	ND	ND	ND	ND	0.9	1	1.1	1.1	1.5	1.3
Carbon Dioxide	mg/l			7.73	7.61	10.8	13.2	9.22	4.5	9.19	8.94	10.9	4.33	12.7	3.39
General Physicals															
Apparent Color	ACU	15	s	ND	3	ND	3	ND	3	3	3	ND	3	3	5
Lab pH	Units			7.8	7.8	7.7	7.6	7.7	8	7.6	7.6	7.5	7.9	7.4	7.8
Odor	TON	3	s	1	**3**	1	2	1	2	1	2	1	**3**	1	2
pH of CaCO3 saturation(25C)	Units			7.016	7.023	6.9	6.913	7.081	7.051	7.319	7.32	7.394	7.383	7.533	8.018
pH of CaCO3 saturation(60C)	Units			6.6	6.6	6.5	6.5	6.6	6.6	6.9	6.9	6.9	6.9	7.1	7.6
Specific Conductance	umho/cm			789	790	896	908	821	827	845	864	830	837	781	454
Metals															
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	2	1.8	2.4	3.2	1.7	1.7	2.6	2.2	1.3	ND	20	25
Barium, Total, ICAP/MS	ug/l	1000	p	**130**	**160**	**120**	**130**	**120**	**140**	56	63	80	91	**120**	60
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	4.8	6.6	3.6	6	4.3	5.6	3	3.3	2	3.7	2	2
Hexavalent Chromium (Cr VI)	mg/l														
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	2.3	3.1	4.3	2.8
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	5.5	ND	6.3	ND	5.3	ND	6.7	ND	7.1	5.3	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	0.6	0.6	2.2	2.3	**8.3**	**9.8**	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p												

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Rio Hondo #1 Zone 1 4/22/2004	Rio Hondo #1 Zone 1 9/22/2004	Rio Hondo #1 Zone 2 4/22/2004	Rio Hondo #1 Zone 2 9/22/2004	Rio Hondo #1 Zone 3 4/22/2004	Rio Hondo #1 Zone 3 9/22/2004	Rio Hondo #1 Zone 4 4/22/2004	Rio Hondo #1 Zone 4 9/22/2004	Rio Hondo #1 Zone 5 4/22/2004	Rio Hondo #1 Zone 5 9/22/2004	Rio Hondo #1 Zone 6 4/22/2004	Rio Hondo #1 Zone 6 9/22/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	270	270	490	490	440	460	450	470	420	420	410	430
Cation Sum	meq/l			4.57	4.51	7.71	7.7	7.28	7.58	7.31	7.45	6.81	6.85	6.66	6.85
Anion Sum	meq/l			4.26	4.23	7.69	7.24	6.95	6.61	6.99	6.77	6.65	6.32	6.48	6.23
Iron, Total, ICAP	mg/l	0.3	s	0.013	ND	0.075	0.068	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	36	20	41	42	ND	ND	ND	ND	ND	ND	ND	ND
Turbidity	NTU	5	s	0.3	0.4	0.35	0.6	0.25	0.4	0.8	1.2	0.5	0.9	2.1	1.2
Alkalinity	mg/l			143	139	165	160	157	153	140	132	121	116	116	114
Boron	mg/l			0.067	0.076	0.057	0.053	0.16	0.16	0.19	0.39	0.17	0.16	0.2	0.16
Bicarbonate as HCO3,calculated	mg/l			174	169	201	195	191	186	171	161	147	141	141	139
Calcium, Total, ICAP	mg/l			41	41	100	100	79	84	68	69	65	65	56	65
Carbonate as CO3, Calculated	mg/l			1.42	1.74	0.824	0.8	0.783	0.763	0.557	0.417	0.302	0.29	0.183	0.286
Hardness (Total, as CaCO3)	mg/l			137	137	324	324	259	272	223	226	220	220	206	220
Chloride	mg/l	250	s	16	17	52	47	55	47	67	65	72	68	78	67
Fluoride	mg/l	2	p	0.25	0.23	0.21	0.19	0.3	0.3	0.39	0.38	0.32	0.3	0.27	0.3
Hydroxide as OH, Calculated	mg/l			0.02	0.03	0.01	0.01	0.01	0.01	0.009	0.007	0.005	0.005	0.003	0.005
Langelier Index - 25 degree	None			0.51	0.6	0.66	0.64	0.53	0.55	0.32	0.2	0.035	0.017	-0.2	0.011
Magnesium, Total, ICAP	mg/l			8.5	8.4	18	18	15	15	13	13	14	14	16	14
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	2.3	2.1	2.8	2.7	2.8	2.7	2.4	2.6
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			3	2.9	3.7	3.6	3.7	3.9	3.9	4	3.9	3.8	4.2	3.9
Sodium, Total, ICAP	mg/l			40	39	26	26	46	47	63	65	53	54	56	54
Sulfate	mg/l	250	s	45	46	140	130	100	99	100	100	95	90	85	89
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	2.3	2.1	2.8	2.7	2.8	2.7	2.4	2.6
Total Organic Carbon	mg/l			ND	ND	ND	ND	ND	ND	0.6	0.7	ND	ND	0.5	ND
Carbon Dioxide	mg/l			2.76	2.13	6.37	6.18	6.05	5.9	6.82	8.09	9.3	8.92	14.1	8.79
General Physicals															
Apparent Color	ACU	15	s	ND	3	ND	3	3	3	ND	ND	ND	3	3	3
Lab pH	Units			8.1	8.2	7.8	7.8	7.8	7.8	7.7	7.6	7.5	7.5	7.3	7.5
Odor	TON	3	s	1	2	1	1	1	1	1	2	1	2	1	2
pH of CaCO3 saturation(25C)	Units			7.592	7.604	7.142	7.155	7.266	7.251	7.379	7.399	7.465	7.483	7.548	7.489
pH of CaCO3 saturation(60C)	Units			7.1	7.2	6.7	6.7	6.8	6.8	6.9	7	7	7	7.1	7
Specific Conductance	umho/cm			440	425	742	730	715	701	736	724	694	679	682	680
Metals															
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	1	ND	2.4	2.2	2.8	2.7	1.9	1.6	1.3	1.5
Barium, Total, ICAP/MS	ug/l	1000	p	18	16	52	55	**110**	**120**	55	59	55	58	64	57
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	2	3.9	2.5	5	3.1	4.8	2.5	3.8	2.1	3.3	2.2	3.3
Hexavalent Chromium (Cr VI)	mg/l														
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p												

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	South Gate #1	South Gate #1	South Gate #1	South Gate #1	South Gate #1	South Gate #1	South Gate #1	South Gate #1	South Gate #1	South Gate #1
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4	Zone 5	Zone 5
				4/29/2004	9/29/2004	4/29/2004	9/29/2004	4/29/2004	9/29/2004	4/29/2004	9/29/2004	4/29/2004	9/29/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	320	310	420	420	440	430	470	460	540	550
Cation Sum	meq/l			5.22	5.21	6.8	6.62	6.98	6.75	7.62	7.15	9.04	8.91
Anion Sum	meq/l			5.06	4.97	6.45	6.67	7.03	6.81	7.5	6.94	9.03	8.53
Iron, Total, ICAP	mg/l	0.3	s	0.058	0.053	ND	ND	ND	ND	ND	ND	0.074	0.074
Manganese, Total, ICAP/MS	ug/l	50	s	**68**	**69**	ND	ND	ND	ND	ND	ND	**130**	**130**
Turbidity	NTU	5	s	0.1	0.3	0.35	0.25	0.25	0.25	0.2	0.15	0.4	0.4
Alkalinity	mg/l			163	160	140	136	164	153	170	161	191	183
Boron	mg/l			0.099	0.13	0.13	0.16	0.099	0.12	0.15	0.18	0.13	0.15
Bicarbonate as HCO3,calculated	mg/l			198	194	170	165	199	186	207	196	232	223
Calcium, Total, ICAP	mg/l			50	50	73	72	77	75	81	76	93	92
Carbonate as CO3, Calculated	mg/l			2.57	3.17	1.39	1.35	2.05	1.92	1.69	1.01	1.51	0.0914
Hardness (Total, as CaCO3)	mg/l			158	157	240	233	258	249	268	252	331	329
Chloride	mg/l	250	s	21	21	49	52	45	45	52	46	110	98
Fluoride	mg/l	2	p	0.3	0.28	0.3	0.29	0.36	0.35	0.36	0.35	0.41	0.4
Hydroxide as OH, Calculated	mg/l			0.03	0.04	0.02	0.02	0.03	0.03	0.02	0.01	0.02	0.001
Langelier Index - 25 degree	None			0.85	0.94	0.75	0.73	0.94	0.9	0.88	0.63	0.89	-0.3
Magnesium, Total, ICAP	mg/l			8	7.9	14	13	16	15	16	15	24	24
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	2.4	2.5	2.4	2.4	1.6	1.6	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.4	2.5	3.2	3.3	2.9	2.9	3.1	3	2.8	2.9
Sodium, Total, ICAP	mg/l			46	46	44	43	40	39	50	47	54	52
Sulfate	mg/l	250	s	57	56	100	110	110	110	120	110	100	100
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.067
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	2.4	2.5	2.4	2.4	1.6	1.6	ND	ND
Total Organic Carbon	mg/l			ND	ND	ND	ND	ND	ND	0.6	ND	0.8	0.7
Carbon Dioxide	mg/l			1.98	1.54	2.7	2.62	2.51	2.35	3.29	4.93	4.64	70.7
General Physicals													
Apparent Color	ACU	15	s	3	3	ND	3	ND	ND	3	ND	3	3
Lab pH	Units			8.3	8.4	8.1	8.1	8.2	8.2	8.1	7.9	8	6.8
Odor	TON	3	s	2	1	2	1	1	1	1	2	1	1
pH of CaCO3 saturation(25C)	Units			7.449	7.458	7.351	7.37	7.26	7.3	7.221	7.272	7.111	7.133
pH of CaCO3 saturation(60C)	Units			7	7	6.9	6.9	6.8	6.9	6.8	6.8	6.7	6.7
Specific Conductance	umho/cm			489	484	642	623	656	642	713	685	863	868
Metals													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	2.3	2.1	2.6	2.5	3	2.7	2.1	1.9	2.7	2.2
Barium, Total, ICAP/MS	ug/l	1000	p	**110**	**120**	84	90	**130**	**150**	65	72	**180**	**210**
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	1.9	ND	1.7	ND	3	1.1	2.1	1.1	1.7	1.3
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	8.9	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	1.4	1.1	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	0.9	0.8	**11**	**8**	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p										

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Whittier #1	Whittier #1	Whittier #1	Whittier #1	Whittier #1	Whittier #1	Whittier #1	Whittier #1	Whittier #1	Whittier #1
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4	Zone 5	Zone 5
				5/27/2004	9/27/2004	5/27/2004	9/27/2004	5/27/2004	9/27/2004	5/27/2004	9/27/2004	5/27/2004	9/27/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	**2770**	**2800**	**2670**	**2630**	**1750**	**1750**	700	710	700	700
Cation Sum	meq/l			41.8	39.6	39.2	37	27.2	26	12	11.7	11.4	11.1
Anion Sum	meq/l			42.2	39.2	38.8	38.4	25.7	26.3	11.3	10.9	10.9	10.5
Iron, Total, ICAP	mg/l	0.3	s	**0.57**	**0.55**	**0.46**	**0.42**	0.28	0.27	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	**100**	**92**	**130**	**120**	**130**	**120**	20	19	15	14
Turbidity	NTU	5	s	3.9	3	3.1	2	1.7	1.6	0.2	0.15	1.6	1.3
Alkalinity	mg/l			254	251	261	271	268	280	243	245	221	223
Boron	mg/l			0.9	0.89	0.96	0.98	0.64	0.65	0.21	0.21	0.17	0.17
Bicarbonate as HCO3,calculated	mg/l			310	306	318	330	327	341	296	299	269	272
Calcium, Total, ICAP	mg/l			200	190	190	180	160	150	82	78	83	79
Carbonate as CO3, Calculated	mg/l			0.637	0.792	0.654	1.7	0.846	1.4	0.766	0.974	0.553	1.12
Hardness (Total, as CaCO3)	mg/l			1080	1010	1010	944	762	725	353	339	372	358
Chloride	mg/l	250	s	**280**	**250**	230	210	180	170	76	71	83	77
Fluoride	mg/l	2	p	0.27	0.26	0.29	0.28	0.49	0.48	0.18	0.17	0.3	0.29
Hydroxide as OH, Calculated	mg/l			0.005	0.007	0.005	0.01	0.007	0.01	0.007	0.009	0.005	0.01
Langelier Index - 25 degree	None			0.85	0.92	0.84	1.2	0.87	1.1	0.54	0.62	0.4	0.69
Magnesium, Total, ICAP	mg/l			140	130	130	120	88	85	36	35	40	39
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	4	4	4.9	4.9
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			11	11	11	10	7	6.9	4.1	4.2	3.6	3.5
Sodium, Total, ICAP	mg/l			460	440	430	410	270	260	110	110	89	89
Sulfate	mg/l	250	s	**1400**	**1300**	**1300**	**1300**	**730**	**760**	190	180	180	170
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	4	4	4.9	4.9
Total Organic Carbon	mg/l			1.7	1.8	2.1	2.2	1.2	1.2	ND	ND	ND	ND
Carbon Dioxide	mg/l			19.6	15.4	20.1	8.31	16.4	10.8	14.9	11.9	17	8.62
General Physicals													
Apparent Color	ACU	15	s	**15**	**15**	**15**	**15**	10	5	ND	3	3	3
Lab pH	Units			7.5	7.6	7.5	7.9	7.6	7.8	7.6	7.7	7.5	7.8
Odor	TON	3	s	2	2	**3**	2	**3**	2	2	1	2	1
pH of CaCO3 saturation(25C)	Units			6.653	6.681	6.664	6.671	6.726	6.736	7.06	7.077	7.096	7.113
pH of CaCO3 saturation(60C)	Units			6.2	6.2	6.2	6.2	6.3	6.3	6.6	6.6	6.7	6.7
Specific Conductance	umho/cm			3420	3330	3240	3130	2290	2240	1080	1050	1050	1030
Metals													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	1.6	1.8	1.6	1.5	1.4	1.4	1.7	ND	1.2
Barium, Total, ICAP/MS	ug/l	1000	p	17	17	18	18	21	22	30	30	26	28
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	1.4	ND	1.2	ND	1.1	ND	ND	2.9	3.4
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	6.9	7.3	5.7	6.5	ND	6.1	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	12	ND	18
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p	ND		ND		ND		ND		ND	

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Willowbrook #1	Willowbrook #1	Willowbrook #1	Willowbrook #1	Willowbrook #1	Willowbrook #1	Willowbrook #1	Willowbrook #1
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4
				5/4/2004	9/21/2004	5/4/2004	9/21/2004	5/4/2004	9/21/2004	5/4/2004	9/21/2004
Total Dissolved Solid (TDS)	mg/l	1000	s	320	340	330	340	320	350	330	340
Cation Sum	meq/l			5.89	5.99	5.56	5.6	5.89	5.76	5.85	5.8
Anion Sum	meq/l			5.68	5.5	5.36	5.27	5.55	5.41	5.63	5.44
Iron, Total, ICAP	mg/l	0.3	s	0.05	0.045	0.02	ND	0.085	0.08	0.018	ND
Manganese, Total, ICAP/MS	ug/l	50	s	**55**	**58**	48	49	33	33	**85**	**89**
Turbidity	NTU	5	s	0.3	0.2	0.15	0.1	0.2	0.3	**10**	**7.8**
Alkalinity	mg/l			195	190	163	158	173	166	176	168
Boron	mg/l			0.17	0.17	0.13	0.13	0.13	0.13	0.13	0.14
Bicarbonate as HCO3,calculated	mg/l			237	231	198	192	211	202	214	204
Calcium, Total, ICAP	mg/l			48	49	56	56	59	58	59	58
Carbonate as CO3, Calculated	mg/l			1.54	2.38	1.62	2.49	1.09	1.65	1.39	1.67
Hardness (Total, as CaCO3)	mg/l			161	164	181	181	201	194	189	186
Chloride	mg/l	250	s	19	19	20	21	20	20	23	23
Fluoride	mg/l	2	p	0.28	0.28	0.29	0.28	0.41	0.41	0.37	0.35
Hydroxide as OH, Calculated	mg/l			0.02	0.03	0.02	0.03	0.01	0.02	0.02	0.02
Langelier Index - 25 degree	None			0.61	0.81	0.7	0.89	0.55	0.72	0.66	0.73
Magnesium, Total, ICAP	mg/l			10	10	10	10	13	12	10	10
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			4.1	4.1	2.6	2.6	3.4	3.5	3	3
Sodium, Total, ICAP	mg/l			59	60	43	44	41	41	46	46
Sulfate	mg/l	250	s	59	55	73	72	72	72	69	68
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			1.3	1	0.7	ND	0.5	ND	ND	ND
Carbon Dioxide	mg/l			4.74	2.92	3.15	1.92	5.31	3.21	4.28	3.24
General Physicals											
Apparent Color	ACU	15	s	5	10	ND	3	3	5	3	5
Lab pH	Units			8	8.2	8.1	8.3	7.9	8.1	8	8.1
Odor	TON	3	s	**4**	**4**	1	2	1	2	**3**	2
pH of CaCO3 saturation(25C)	Units			7.389	7.391	7.4	7.414	7.35	7.376	7.344	7.372
pH of CaCO3 saturation(60C)	Units			6.9	6.9	7	7	6.9	6.9	6.9	6.9
Specific Conductance	umho/cm			551	534	524	503	536	518	543	525
Metals											
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	10	10	ND	ND	3.3	3.4	5.6	5.4
Barium, Total, ICAP/MS	ug/l	1000	p	56	59	50	52	70	71	**120**	**130**
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	4.1	ND	3	ND	2.8	ND	3.3	2.5
Hexavalent Chromium (Cr VI)	mg/l										
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/l	13	p	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p								

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	Carson #1 Zone 1 4/8/04	Carson #1 Zone 1 9/9/04	Carson #1 Zone 2 4/8/04	Carson #1 Zone 2 9/9/04	Carson #1 Zone 3 4/8/04	Carson #1 Zone 3 9/9/04	Carson #1 Zone 4 4/8/04	Carson #1 Zone 4 9/9/04
General Mineral											
Total Dissolved Solid (TDS)	mg/l	1000	s	210	200	230	220	320	310	410	390
Cation Sum	meq/l			3.49	3.61	4.11	4.05	5.31	5.22	6.9	6.58
Anion Sum	meq/l			3.49	3.39	3.99	3.87	5.2	4.95	6.65	6.25
Iron, Total, ICAP	mg/l	0.3	s	0.021	0.025	0.022	0.024	0.014	ND	0.056	0.055
Manganese, Total, ICAP/MS	ug/l	50	s	30	31	22	20	35	34	**92**	**84**
Turbidity	NTU	5	s	0.1	0.75	0.1	0.2	0.05	0.1	1.7	2.8
Alkalinity	mg/l			147	142	172	166	168	157	203	187
Boron	mg/l			0.1	0.1	0.11	0.11	0.12	0.11	0.13	0.13
Bicarbonate as HCO3,calculated	mg/l			179	172	209	201	204	191	247	227
Calcium, Total, ICAP	mg/l			20	21	33	32	45	45	60	57
Carbonate as CO3, Calculated	mg/l			1.84	1.77	1.71	3.28	2.65	1.97	2.54	1.86
Hardness (Total, as CaCO3)	mg/l			66.8	70.1	111	108	166	162	212	200
Chloride	mg/l	250	s	19	19	19	19	21	20	37	36
Fluoride	mg/l	2	p	0.24	0.23	0.2	0.19	0.29	0.28	0.4	0.37
Hydroxide as OH, Calculated	mg/l			0.03	0.03	0.02	0.04	0.03	0.03	0.03	0.02
Langelier Index - 25 degree	None			0.31	0.31	0.49	0.76	0.82	0.69	0.93	0.77
Magnesium, Total, ICAP	mg/l			4.1	4.3	6.9	6.9	13	12	15	14
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.7	2.9	2.4	2.3	2.9	2.9	4	3.9
Sodium, Total, ICAP	mg/l			48	49	42	42	44	44	59	57
Sulfate	mg/l	250	s	ND	ND	ND	ND	59	59	73	71
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			1	0.7	0.6	ND	ND	ND	0.6	ND
Carbon Dioxide	mg/l			2.26	2.17	3.32	1.6	2.04	2.41	3.12	3.61
General Physical											
Apparent Color	ACU	15	s	5	5	3	3	ND	3	3	3
Lab pH	Units			8.2	8.2	8.1	8.4	8.3	8.2	8.2	8.1
Odor	TON	3	s	2	1	1	1	1	1	1	1
pH of CaCO3 saturation(25C)	Units			7.891	7.887	7.606	7.637	7.482	7.511	7.274	7.333
pH of CaCO3 saturation(60C)	Units			7.4	7.4	7.2	7.2	7	7.1	6.8	6.9
Specific Conductance	mho/cm			339	321	390	369	508	492	659	622
Metal											
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	1.1	1.3	ND	ND	ND	ND	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	17	18	36	37	66	68	230	220
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Hexavalent Chromium (Cr VI)	mg/l										
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p								

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	Carson #2 Zone 1 4/5/04	Carson #2 Zone 1 9/30/04	Carson #2 Zone 2 4/5/04	Carson #2 Zone 2 9/30/04	Carson #2 Zone 3 4/5/04	Carson #2 Zone 3 9/30/04	Carson #2 Zone 4 4/5/04	Carson #2 Zone 4 9/30/04	Carson #2 Zone 5 4/5/04	Carson #2 Zone 5 9/30/04
General Mineral													
Total Dissolved Solid (TDS)	mg/l	1000	s	240	270	250	250	250	230	270	250	290	340
Cation Sum	meq/l			3.8	4.72	4.42	4.55	4.44	3.88	4.81	4.9	4.51	4.72
Anion Sum	meq/l			3.78	4.52	4.42	4.35	4.34	3.8	4.72	4.56	4.51	4.43
Iron, Total, ICAP	mg/l	0.3	s	0.017	0.027	0.011	ND	0.03	ND	0.025	ND	0.016	ND
Manganese, Total, ICAP/MS	ug/l	50	s	3.1	22	16	12	28	ND	28	19	**67**	**59**
Turbidity	NTU	5	s	0.65	0.2	0.15	0.15	0.15	1.6	0.35	0.4	14	66
Alkalinity	mg/l			163	173	190	186	183	161	206	195	181	173
Boron	mg/l			0.14	0.14	0.13	0.14	0.13	0.15	0.11	0.12	0.1	0.12
Bicarbonate as HCO3,calculated	mg/l			195	209	230	225	222	193	250	237	220	210
Calcium, Total, ICAP	mg/l			2.2	24	12	12	23	2.2	36	36	36	40
Carbonate as CO3, Calculated	mg/l			10.1	4.3	4.73	5.82	3.62	7.91	2.05	2.44	1.43	2.72
Hardness (Total, as CaCO3)	mg/l			7.1	93.3	46.4	46.4	88.3	7.06	139	139	125	138
Chloride	mg/l	250	s	18	23	20	22	20	20	21	23	20	22
Fluoride	mg/l	2	p	0.32	0.26	0.19	0.16	0.27	0.31	0.23	0.22	0.28	0.27
Hydroxide as OH, Calculated	mg/l			0.1	0.05	0.05	0.07	0.04	0.1	0.02	0.03	0.02	0.03
Langelier Index - 25 degree	None			0.087	0.75	0.5	0.59	0.66	-0.009	0.61	0.69	0.45	0.78
Magnesium, Total, ICAP	mg/l			0.39	8.1	4	4	7.5	0.38	12	12	8.6	9.2
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			1.8	4.3	3.9	4	4.1	1.6	4.1	4.2	3.3	3.5
Sodium, Total, ICAP	mg/l			83	63	78	81	59	85	44	46	44	43
Sulfate	mg/l	250	s	ND	19	2	ND	4.7	ND	ND	ND	15	16
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			1.7	0.6	0.9	1	1.1	1.4	1	0.9	ND	ND
Carbon Dioxide	mg/l			0.491	1.32	1.45	1.13	1.77	0.612	3.97	2.99	4.4	2.1
General Physical													
Apparent Color	ACU	15	s	**40**	10	**15**	**20**	10	**40**	10	3	5	10
Lab pH	Units			8.9	8.5	8.5	8.6	8.4	8.8	8.1	8.2	8	8.3
Odor	TON	3	s	1	2	1	1	**8**	2	**3**	**3**	2	2
pH of CaCO3 saturation(25C)	Units			8.813	7.745	8.004	8.014	7.737	8.817	7.491	7.514	7.546	7.521
pH of CaCO3 saturation(60C)	Units			8.4	7.3	7.6	7.6	7.3	8.4	7	7.1	7.1	7.1
Specific Conductance	mho/cm			383	448	443	430	425	374	464	453	446	444
Metal													
Aluminum, Total, ICAP/MS	ug/l	1000	p	28	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	1.2	ND	ND	ND	ND	ND	ND	ND	1.3	ND
Barium, Total, ICAP/MS	ug/l	1000	p	ND	11	6.9	6	11	ND	18	17	15	15
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexavalent Chromium (Cr VI)	mg/l			ND		ND		ND		ND		ND	
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p	ND		ND		ND		ND		ND	

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Chandler #3b Zone 1 9/30/04
General Mineral				
Total Dissolved Solid (TDS)	mg/l	1000	s	570
Cation Sum	meq/l			10.5
Anion Sum	meq/l			9.74
Iron, Total, ICAP	mg/l	0.3	s	0.21
Manganese, Total, ICAP/MS	ug/l	50	s	**77**
Turbidity	NTU	5	s	0.9
Alkalinity	mg/l			303
Boron	mg/l			0.22
Bicarbonate as HCO3,calculated	mg/l			368
Calcium, Total, ICAP	mg/l			70
Carbonate as CO3, Calculated	mg/l			3.79
Hardness (Total, as CaCO3)	mg/l			261
Chloride	mg/l	250	s	130
Fluoride	mg/l	2	p	0.25
Hydroxide as OH, Calculated	mg/l			0.03
Langelier Index - 25 degree	None			1.2
Magnesium, Total, ICAP	mg/l			21
Mercury	ug/l	2	p	ND
Nitrate-N by IC	mg/l	10	p	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND
Potassium, Total, ICAP	mg/l			3
Sodium, Total, ICAP	mg/l			120
Sulfate	mg/l	250	s	ND
Surfactants	mg/l	0.5	s	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND
Total Organic Carbon	mg/l			1.4
Carbon Dioxide	mg/l			4.64
General Physical				
Apparent Color	ACU	15	s	10
Lab pH	Units			8.2
Odor	TON	3	s	2
pH of CaCO3 saturation(25C)	Units			7.034
pH of CaCO3 saturation(60C)	Units			6.6
Specific Conductance	mho/cm			998
Metal				
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	2.7
Barium, Total, ICAP/MS	ug/l	1000	p	100
Beryllium, Total, ICAP/MS	ug/l	4	p	ND
Chromium, Total, ICAP/MS	ug/l	50	p	1.2
Hexavalent Chromium (Cr VI)	mg/l			
Cadmium, Total, ICAP/MS	ug/l	5	p	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND
Lead, Total, ICAP/MS	ug/l	15		ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND
Volatile Organic Compounds				
Trichloroethylene (TCE)	ug/l	5	p	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND
1,1-Dichloroethylene	ug/l	6	p	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND
Carbon Tetrachloride	ug/l	0.5	p	ND
1,1-Dichloroethane	ug/l	100	p	ND
1,2-Dichloroethane	ug/l	0.5	p	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND
Isopropylbenzene	ug/l			ND
n-Propylbenzene	ug/l			ND
Dichlorodifluoromethane	ug/l			ND
Benzene	ug/l	1	p	ND
Toluene	ug/l	1750	p	ND
m,p-Xylenes	ug/l	150	p	ND
Ethyl benzene	ug/l	700	p	ND
MTBE	ug/L	13	p	ND
Perchlorate	ug/l	6	p	

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	Gardena #1 Zone 1 4/15/04	Gardena #1 Zone 1 9/13/04	Gardena #1 Zone 2 4/15/04	Gardena #1 Zone 2 9/13/04	Gardena #1 Zone 3 4/15/04	Gardena #1 Zone 3 9/13/04	Gardena #1 Zone 4 4/15/04	Gardena #1 Zone 4 9/13/04
General Mineral											
Total Dissolved Solid (TDS)	mg/l	1000	s	350	350	330	340	340	340	**1530**	**1550**
Cation Sum	meq/l			5.88	5.9	5.69	5.7	5.67	5.56	23.5	23.7
Anion Sum	meq/l			6.05	5.68	5.36	5.24	5.39	5.1	23.5	26.8
Iron, Total, ICAP	mg/l	0.3	s	0.075	0.079	0.013	0.032	0.017	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	33	41	**65**	**70**	28	27	ND	ND
Turbidity	NTU	5	s	2.4	1.2	15	4.2	7	16	15	14
Alkalinity	mg/l			278	261	180	165	171	158	171	165
Boron	mg/l			0.37	0.41	0.14	0.14	0.13	0.12	0.16	0.13
Bicarbonate as HCO3,calculated	mg/l			338	317	219	201	208	192	208	201
Calcium, Total, ICAP	mg/l			13	13	55	56	57	55	260	260
Carbonate as CO3, Calculated	mg/l			3.48	3.26	1.13	1.04	1.7	1.57	0.34	0.261
Hardness (Total, as CaCO3)	mg/l			64.6	63.8	191	193	188	183	950	958
Chloride	mg/l	250	s	17	16	24	20	22	21	**650**	**770**
Fluoride	mg/l	2	p	0.2	0.18	0.4	0.37	0.36	0.31	0.15	0.15
Hydroxide as OH, Calculated	mg/l			0.03	0.03	0.01	0.01	0.02	0.02	0.004	0.003
Langelier Index - 25 degree	None			0.4	0.37	0.54	0.51	0.73	0.68	0.69	0.57
Magnesium, Total, ICAP	mg/l			7.8	7.6	13	13	11	11	73	75
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	**12**	**12**
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			11	11	3.6	3.6	3.3	3.2	5.8	5.9
Sodium, Total, ICAP	mg/l			99	100	41	40	42	42	100	100
Sulfate	mg/l	250	s	ND	ND	51	65	64	64	44	42
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	12	12
Total Organic Carbon	mg/l			2.6	2.5	ND	ND	ND	ND	ND	ND
Carbon Dioxide	mg/l			4.27	4	5.51	5.06	3.3	3.05	16.6	20.1
General Physical											
Apparent Color	ACU	15	s	**30**	**30**	5	5	5	5	5	5
Lab pH	Units			8.2	8.2	7.9	7.9	8.1	8.1	7.4	7.3
Odor	TON	3	s	**4**	**8**	**4**	2	**4**	**3**	**4**	2
pH of CaCO3 saturation(25C)	Units			7.802	7.83	7.364	7.394	7.371	7.421	6.712	6.727
pH of CaCO3 saturation(60C)	Units			7.4	7.4	6.9	6.9	6.9	7	6.3	6.3
Specific Conductance	mho/cm			598	571	541	530	546	519	2490	2490
Metal											
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	46	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	20	18	ND	ND	ND	ND	1.1	ND
Barium, Total, ICAP/MS	ug/l	1000	p	14	16	49	51	24	26	250	290
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	3.6	ND	2.6	ND	2.4	ND	7.6	5.5
Hexavalent Chromium (Cr VI)	mg/l										
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	6.4	6.7
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	9	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	0.57	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	15	10	ND	ND	ND	ND	17	13
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p								

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Gardena #2 Zone 1 4/12/04	Gardena #2 Zone 1 9/26/04	Gardena #2 Zone 2 4/12/04	Gardena #2 Zone 2 9/26/04	Gardena #2 Zone 3 4/12/04	Gardena #2 Zone 3 9/26/04	Gardena #2 Zone 4 4/12/04	Gardena #2 Zone 4 9/26/04	Gardena #2 Zone 5 4/12/04	Gardena #2 Zone 5 9/26/04
General Mineral													
Total Dissolved Solid (TDS)	mg/l	1000	s	330	330	310	320	310	320	230	230	320	300
Cation Sum	meq/l			6.3	6.23	5.41	5.56	5.63	5.36	4.16	4.21	5.45	5.42
Anion Sum	meq/l			4.4	5.83	5.67	5.14	5.57	5.05	3.98	3.88	5.15	5.02
Iron, Total, ICAP	mg/l	0.3	s	0.034	0.029	0.052	0.051	0.086	0.074	0.02	0.02	0.095	0.09
Manganese, Total, ICAP/MS	ug/l	50	s	39	33	**56**	**53**	**88**	**82**	38	42	**150**	**130**
Turbidity	NTU	5	s	2.1	3.3	0.3	0.25	0.4	0.65	1.4	0.15	1.9	0.65
Alkalinity	mg/l			201	274	201	173	198	168	170	165	189	180
Boron	mg/l			0.33	0.33	0.17	0.18	0.13	0.13	0.096	0.1	0.12	0.13
Bicarbonate as HCO3,calculated	mg/l			244	332	245	210	241	204	207	200	230	219
Calcium, Total, ICAP	mg/l			17	16	37	38	51	49	32	32	45	47
Carbonate as CO3, Calculated	mg/l			3.16	5.42	1.59	2.16	1.24	2.1	1.69	2.59	1.19	2.26
Hardness (Total, as CaCO3)	mg/l			68.8	65.1	142	144	181	172	117	117	158	163
Chloride	mg/l	250	s	13	12	21	20	21	21	20	20	34	35
Fluoride	mg/l	2	p	0.25	0.23	0.27	0.26	0.37	0.36	0.28	0.27	0.3	0.29
Hydroxide as OH, Calculated	mg/l			0.03	0.04	0.02	0.03	0.01	0.03	0.02	0.03	0.01	0.03
Langelier Index - 25 degree	None			0.47	0.68	0.51	0.66	0.54	0.75	0.48	0.66	0.47	0.77
Magnesium, Total, ICAP	mg/l			6.4	6.1	12	12	13	12	9	9	11	11
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			5.5	5.5	5.5	5.8	3.7	3.7	3.1	3.2	3.1	3.2
Sodium, Total, ICAP	mg/l			110	110	56	58	44	42	40	41	51	48
Sulfate	mg/l	250	s	ND	ND	50	53	48	52	ND	ND	19	20
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			3.3	2.9	0.9	0.5	ND	ND	0.7	0.5	0.5	ND
Carbon Dioxide	mg/l			2.45	2.64	4.9	2.65	6.07	2.57	3.29	2	5.79	2.76
General Physical													
Apparent Color	ACU	15	s	**30**	**25**	10	5	5	3	5	3	5	3
Lab pH	Units			8.3	8.4	8	8.2	7.9	8.2	8.1	8.3	7.9	8.2
Odor	TON	3	s	**8**	**3**	**4**	2	**4**	2	**8**	1	**8**	2
pH of CaCO3 saturation(25C)	Units			7.827	7.72	7.488	7.543	7.355	7.445	7.624	7.639	7.43	7.432
pH of CaCO3 saturation(60C)	Units			7.4	7.3	7	7.1	6.9	7	7.2	7.2	7	7
Specific Conductance	mho/cm			576	490	533	449	514	434	398	340	529	462
Metal													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	1	ND
Barium, Total, ICAP/MS	ug/l	1000	p	21	22	17	19	18	19	55	61	61	62
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	3.9	ND	2.7	ND	2.4	ND	2.5	ND	1.8
Hexavalent Chromium (Cr VI)	mg/l			ND		ND		ND		ND		ND	
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p	ND		ND		ND		ND		ND	

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	Haw-thorne #1	Haw-thorne #1	Haw-thorne #1	Haw-thorne #1	Haw-thorne #1	Haw-thorne #1	Haw-thorne #1	Haw-thorne #1	Haw-thorne #1	Haw-thorne #1	Haw-thorne #1	Haw-thorne #1
				Zone 1	Zone 1	Zone 2	Zone 2	Zone 3	Zone 3	Zone 4	Zone 4	Zone 5	Zone 5	Zone 6	Zone 6
				4/20/04	9/20/04	4/20/04	9/20/04	4/20/04	9/20/04	4/20/04	9/20/04	4/20/04	9/20/04	4/20/04	9/20/04
General Mineral															
Total Dissolved Solid (TDS)	mg/l	1000	s	900	910	810	810	600	590	460	810	920	890	**2050**	**2100**
Cation Sum	meq/l			15.4	16.2	13.5	14	11	11	8.01	14	15.3	13.2	34.2	32.7
Anion Sum	meq/l			15.3	14.9	13.7	13.1	10.5	10.3	7.76	13.2	16.2	13.8	36.1	33.7
Iron, Total, ICAP	mg/l	0.3	s	0.16	0.19	0.15	0.13	0.21	0.22	0.056	0.12	0.026	0.025	0.12	0.096
Manganese, Total, ICAP/MS	ug/l	50	s	15	15	**56**	**53**	**74**	**78**	42	**55**	**160**	**170**	**630**	**760**
Turbidity	NTU	5	s	2.9	1.1	1.4	4.8	0.5	0.75	0.6	3	0.2	0.3	6.6	3.6
Alkalinity	mg/l			698	682	626	596	463	447	315	600	216	189	320	293
Boron	mg/l			1.5	1.6	1.1	1.1	0.55	0.6	0.39	1.1	0.19	0.14	0.36	0.34
Bicarbonate as HCO3,calculated	mg/l			849	830	760	724	563	544	384	728	263	230	390	357
Calcium, Total, ICAP	mg/l			16	18	13	15	35	36	39	15	130	110	290	280
Carbonate as CO3, Calculated	mg/l			6.95	6.79	9.85	9.39	5.8	4.45	1.98	9.44	0.857	1.49	0.637	1.16
Hardness (Total, as CaCO3)	mg/l			93.5	107	68.3	75.3	182	185	172	74.5	514	439	1090	1040
Chloride	mg/l	250	s	47	46	43	41	44	47	51	43	370	320	**610**	**580**
Fluoride	mg/l	2	p	0.12	0.11	0.26	0.24	0.23	0.21	0.38	0.24	0.29	0.29	0.26	0.22
Hydroxide as OH, Calculated	mg/l			0.02	0.02	0.03	0.03	0.03	0.02	0.01	0.03	0.009	0.02	0.004	0.009
Langelier Index - 25 degree	None			0.79	0.83	0.85	0.89	1	0.95	0.63	0.89	0.79	0.96	1	1.3
Magnesium, Total, ICAP	mg/l			13	15	8.7	9.2	23	23	18	9	46	40	89	82
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			20	23	14	14	14	15	9.1	14	7.7	7	7.8	7.5
Sodium, Total, ICAP	mg/l			300	310	270	280	160	160	100	280	110	97	280	270
Sulfate	mg/l	250	s	ND	ND	ND	ND	ND	ND	ND	ND	67	47	590	550
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.135	0.2
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND
Total Organic Carbon	mg/l			13.8	14.3	13.6	12.2	4.9	4.5	2.9	13.5	1.2	0.8	2.6	2.4
Carbon Dioxide	mg/l			13.5	13.2	7.62	7.26	7.1	8.64	9.67	7.3	10.5	4.6	31.1	14.2
General Physical															
Apparent Color	ACU	15	s	**200**	**250**	**200**	**250**	**35**	**50**	**20**	**250**	5	5	5	5
Lab pH	Units			8.1	8.1	8.3	8.3	8.2	8.1	7.9	8.3	7.7	8	7.4	7.7
Odor	TON	3	s	**4**	2	**4**	2	**4**	1	**8**	**4**	**17**	**4**	**17**	**17**
pH of CaCO3 saturation(25C)	Units			7.312	7.271	7.45	7.409	7.15	7.153	7.27	7.407	6.911	7.042	6.392	6.445
pH of CaCO3 saturation(60C)	Units			6.9	6.8	7	7	6.7	6.7	6.8	7	6.5	6.6	5.9	6
Specific Conductance	mho/cm			1400	1420	1260	1280	969	993	739	1290	1570	1410	3110	3100
Metal															
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	1.1	ND	ND	ND	ND	ND	2	ND	6.2	2.5
Barium, Total, ICAP/MS	ug/l	1000	p	30	33	24	26	30	35	30	28	130	120	56	53
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	1.2	1.2	6.1	ND	4	1.2	3	1.3	5.4	4.1
Hexavalent Chromium (Cr VI)	mg/l														
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.2	13
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.2	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	5.7	6.3	6.5	ND	ND	5.8	ND	ND	ND	ND	5.3	11
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**17**	**17**
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.02	1.1
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.33	7
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1.73**	**2.2**
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p												

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Inglewood #1 Zone 1 3/18/04	Inglewood #1 Zone 1 9/2/04	Inglewood #1 Zone 3 5/11/04	Inglewood #1 Zone 3 9/28/04	Inglewood #1 Zone 4 5/11/04	Inglewood #1 Zone 4 9/28/04	Inglewood #1 Zone 5 5/11/04	Inglewood #1 Zone 5 9/28/04
General Mineral											
Total Dissolved Solid (TDS)	mg/l	1000	s	**2580**	**2750**	960	990	720	740	**1070**	**1130**
Cation Sum	meq/l			43.9	44.1	16.5	16.4	12.2	12.1	18.3	17.7
Anion Sum	meq/l			48	43.7	15.9	16.8	12.1	12.6	17.6	18.8
Iron, Total, ICAP	mg/l	0.3	s	**0.96**	**1.1**	**0.35**	**0.34**	**0.33**	**0.32**	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	36	30	**260**	**270**	**180**	**190**	ND	4.3
Turbidity	NTU	5	s	1.5	4.4	1.5	1.5	1.3	1.4	0.45	1.4
Alkalinity	mg/l			1027	850	303	292	225	217	279	268
Boron	mg/l			4.9	5.1	0.42	0.43	0.2	0.22	0.28	0.28
Bicarbonate as HCO3,calculated	mg/l			1250	1040	369	356	274	264	340	327
Calcium, Total, ICAP	mg/l			150	140	110	110	92	92	170	160
Carbonate as CO3, Calculated	mg/l			6.45	4.26	0.758	0.921	0.892	0.86	0.35	0.337
Hardness (Total, as CaCO3)	mg/l			585	551	448	444	394	390	647	618
Chloride	mg/l	250	s	**920**	**900**	260	290	210	230	320	360
Fluoride	mg/l	2	p	0.29	0.28	0.52	0.51	0.42	0.41	0.25	0.24
Hydroxide as OH, Calculated	mg/l			0.01	0.01	0.005	0.007	0.009	0.009	0.003	0.003
Langelier Index - 25 degree	None			1.7	1.5	0.66	0.75	0.66	0.64	0.52	0.47
Magnesium, Total, ICAP	mg/l			51	49	42	41	40	39	54	53
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	6.8	7.6
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			18	18	6.8	6.8	9.1	9.3	6.2	6.5
Sodium, Total, ICAP	mg/l			730	750	170	170	93	94	120	120
Sulfate	mg/l	250	s	70	60	120	130	78	85	120	130
Surfactants	mg/l	0.5	s	0.061	0.069	ND	ND	ND	ND	ND	0.069
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	6.8	7.6
Total Organic Carbon	mg/l			43	40	1.2	1.1	0.7	0.7	0.9	0.9
Carbon Dioxide	mg/l			31.5	33	23.3	17.9	10.9	10.5	42.9	41.3
General Physical											
Apparent Color	ACU	15	s	**200**	**175**	10	10	5	10	3	3
Lab pH	Units			7.9	7.8	7.5	7.6	7.7	7.7	7.2	7.2
Odor	TON	3	s	**17**	**8**	**3**	2	**3**	2	**3**	2
pH of CaCO3 saturation(25C)	Units			6.172	6.282	6.837	6.852	7.043	7.06	6.683	6.726
pH of CaCO3 saturation(60C)	Units			5.7	5.8	6.4	6.4	6.6	6.6	6.2	6.3
Specific Conductance	mho/cm			4460	4140	1600	1590	1240	1230	1780	1760
Metal											
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	10	ND	1.8	ND	1.6	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	210	210	34	37	96	98	190	210
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	15	2.1	9.9	2.5	16	2.7
Hexavalent Chromium (Cr VI)	mg/l										
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		1.4	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	5.2	ND	ND	ND	7.6	6.8
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	12	ND	6.4	ND	14	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	0.82	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	5.9	ND	ND
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5	p	**12**	**6.4**	ND	ND	ND	ND	**15**	**9.2**
Tetrachloroethylene (PCE)	ug/l	5	p	1	0.5	ND	ND	ND	ND	1.5	1
1,1-Dichloroethylene	ug/l	6	p	0.9	0.5	ND	ND	ND	ND	1.3	1.1
cis-1,2-Dichloroethylene	ug/l	6	p	0.9	0.7	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p								

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	Lomita #1 Zone 1 4/27/04	Lomita #1 Zone 1 9/13/04	Lomita #1 Zone 2 4/27/04	Lomita #1 Zone 2 9/13/04	Lomita #1 Zone 3 4/27/04	Lomita #1 Zone 3 9/13/04	Lomita #1 Zone 4 4/27/04	Lomita #1 Zone 4 9/14/04	Lomita #1 Zone 5 4/27/04	Lomita #1 Zone 5 9/14/04
General Mineral													
Total Dissolved Solid (TDS)	mg/l	1000	s	**1480**	**1730**	930	930	790	830	580	570	**1300**	**1430**
Cation Sum	meq/l			22.5	21.5	15.2	14.4	13.6	14	10.3	9.96	19.7	19.7
Anion Sum	meq/l			23.8	22.9	15.1	15.6	13.7	14.5	9.74	9.39	21	20.6
Iron, Total, ICAP	mg/l	0.3	s	0.021	0.12	0.012	ND	0.022	ND	ND	ND	0.09	0.1
Manganese, Total, ICAP/MS	ug/l	50	s	**330**	**300**	**140**	**140**	**120**	**130**	**85**	**72**	**250**	**240**
Turbidity	NTU	5	s	0.35	0.75	1.4	3.2	1.3	1.1	0.9	0.9	0.5	0.4
Alkalinity	mg/l			258	243	249	233	291	273	239	222	257	242
Boron	mg/l			0.76	0.7	0.44	0.44	0.44	0.44	0.38	0.36	0.61	0.6
Bicarbonate as HCO3,calculated	mg/l			314	296	303	284	354	332	291	270	313	295
Calcium, Total, ICAP	mg/l			150	150	100	97	81	88	60	56	140	140
Carbonate as CO3, Calculated	mg/l			1.29	0.964	2.48	1.47	3.65	1.71	2.38	2.78	1.62	1.21
Hardness (Total, as CaCO3)	mg/l			539	535	373	358	297	319	220	206	510	510
Chloride	mg/l	250	s	**650**	**640**	340	370	270	310	170	170	**550**	**560**
Fluoride	mg/l	2	p	0.1	0.09	0.15	0.09	0.16	0.14	0.22	0.22	0.1	0.09
Hydroxide as OH, Calculated	mg/l			0.01	0.009	0.02	0.01	0.03	0.01	0.02	0.03	0.01	0.01
Langelier Index - 25 degree	None			1	0.9	1.1	0.9	1.2	0.92	0.9	0.93	1.1	0.97
Magnesium, Total, ICAP	mg/l			40	39	30	28	23	24	17	16	39	39
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			14	14	12	12	9.8	10	8	7.6	13	13
Sodium, Total, ICAP	mg/l			260	240	170	160	170	170	130	130	210	210
Sulfate	mg/l	250	s	13	ND	27	25	12	12	7.4	7.1	17	ND
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.07
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			0.9	0.8	2.9	1.6	1.6	2.6	2.4	2.3	1	0.8
Carbon Dioxide	mg/l			9.95	11.8	4.81	7.15	4.47	8.36	4.62	3.41	7.88	9.35
General Physical													
Apparent Color	ACU	15	s	3	5	10	10	**20**	**15**	**20**	**30**	3	5
Lab pH	Units			7.8	7.7	8.1	7.9	8.2	7.9	8.1	8.2	7.9	7.8
Odor	TON	3	s	**8**	**17**	**8**	**8**	**4**	**17**	**8**	**8**	**4**	**8**
pH of CaCO3 saturation(25C)	Units			6.772	6.798	6.964	7.005	6.988	6.979	7.203	7.265	6.803	6.829
pH of CaCO3 saturation(60C)	Units			6.3	6.4	6.5	6.6	6.5	6.5	6.8	6.8	6.4	6.4
Specific Conductance	mho/cm			2380	2250	1590	1490	1390	1420	992	930	2100	2090
Metal													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	1.1	ND	ND	ND	5.7	ND	ND	ND	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	88	84	64	62	52	56	36	32	87	85
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	7.2	ND	ND	ND	ND	ND	ND	ND	7.2	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	5.6	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p										

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004

Water Quality Constituents	Units	MCL	MCL Type	Long Beach #3 Zone 1 5/12/04	Long Beach #3 Zone 1 9/15/04	Long Beach #3 Zone 2 5/12/04	Long Beach #3 Zone 2 9/15/04	Long Beach #3 Zone 3 5/12/04	Long Beach #3 Zone 3 9/15/04	Long Beach #3 Zone 4 5/12/04	Long Beach #3 Zone 4 9/15/04	Long Beach #3 Zone 5 5/12/04	Long Beach #3 Zone 5 9/15/04
General Mineral													
Total Dissolved Solid (TDS)	mg/l	1000	s	450	470	240	250	250	270	**1380**	**1480**	**1820**	**1830**
Cation Sum	meq/l			8.38	8.32	3.8	3.89	4.48	4.46	20.3	21.6	25.5	26.5
Anion Sum	meq/l			7.86	7.47	3.71	4.71	4.25	4.34	20.9	27.1	28	28.8
Iron, Total, ICAP	mg/l	0.3	s	0.054	0.057	0.013	ND	0.019	0.02	0.033	0.043	0.21	0.23
Manganese, Total, ICAP/MS	ug/l	50	s	15	16	11	11	16	17	**220**	**250**	**350**	**360**
Turbidity	NTU	5	s	0.7	3	0.45	0.3	1	0.7	0.25	0.85	1.1	1.2
Alkalinity	mg/l			369	348	135	129	164	161	134	130	135	127
Boron	mg/l			0.43	0.37	0.13	0.13	0.13	0.14	0.11	0.11	0.11	0.12
Bicarbonate as HCO3,calculated	mg/l			448	421	163	156	198	195	163	158	164	155
Calcium, Total, ICAP	mg/l			12	11	17	17	23	23	220	240	300	310
Carbonate as CO3, Calculated	mg/l			5.81	8.65	3.35	3.21	4.07	3.18	0.841	0.816	0.847	0.8
Hardness (Total, as CaCO3)	mg/l			44.8	41.9	54.8	54.8	74.7	73.9	784	850	1050	1070
Chloride	mg/l	250	s	16	17	18	40	34	39	**600**	**820**	**850**	**880**
Fluoride	mg/l	2	p	0.49	0.53	0.35	0.37	0.3	0.31	0.18	0.16	0.17	0.15
Hydroxide as OH, Calculated	mg/l			0.03	0.05	0.05	0.05	0.05	0.04	0.01	0.01	0.01	0.01
Langelier Index - 25 degree	None			0.59	0.72	0.5	0.48	0.71	0.61	1	1	1.1	1.1
Magnesium, Total, ICAP	mg/l			3.6	3.5	3	3	4.2	4	57	61	72	73
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			3.6	3.6	2.1	2.2	2.6	2.6	10	11	9	9.8
Sodium, Total, ICAP	mg/l			170	170	61	63	67	67	99	100	100	110
Sulfate	mg/l	250	s	ND	ND	23	47	ND	ND	61	67	61	69
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			7	7.1	1.2	1.2	2.9	2.8	0.6	ND	ND	0.63
Carbon Dioxide	mg/l			4.49	2.66	1.03	0.987	1.25	1.55	4.1	3.98	4.13	3.9
General Physical													
Apparent Color	ACU	15	s	**70**	**70**	**15**	**15**	**20**	**25**	3	ND	3	ND
Lab pH	Units			8.3	8.5	8.5	8.5	8.5	8.4	7.9	7.9	7.9	7.9
Odor	TON	3	s	**4**	**4**	2	**3**	**3**	2	2	2	**3**	2
pH of CaCO3 saturation(25C)	Units			7.715	7.779	8.002	8.021	7.787	7.793	6.89	6.866	6.753	6.763
pH of CaCO3 saturation(60C)	Units			7.3	7.3	7.6	7.6	7.3	7.3	6.4	6.4	6.3	6.3
Specific Conductance	mho/cm			734	720	367	369	429	420	2130	2220	2720	2730
Metal													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	1	ND	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	8.3	9.1	13	13	12	12	76	88	140	150
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	2.3	1.2	2.9	ND	2.5	ND	2.3	ND
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	5.1	7.5	8.2	9.9
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	20	ND	28	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	23	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p	ND		ND	ND	ND		ND		ND	

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	Long Beach #8 Zone 1 5/20/04	Long Beach #8 Zone 1 9/29/04	Long Beach #8 Zone 2 5/20/04	Long Beach #8 Zone 2 9/29/04	Long Beach #8 Zone 3 5/20/04	Long Beach #8 Zone 3 9/30/04	Long Beach #8 Zone 4 5/20/04	Long Beach #8 Zone 4 9/30/04	Long Beach #8 Zone 5 5/20/04	Long Beach #8 Zone 5 9/30/04	Long Beach #8 Zone 6 5/20/04	Long Beach #8 Zone 6 9/30/04
General Mineral															
Total Dissolved Solid (TDS)	mg/l	1000	s	700	690	650	640	910	900	**1380**	**1380**	**1040**	**1030**	**1010**	**1000**
Cation Sum	meq/l			11	11	10.8	10.3	15	15.4	23.8	24.4	17.8	18	16.4	16.5
Anion Sum	meq/l			10.5	10.8	9.73	9.96	13.7	14.3	25.4	24.3	17.7	18.2	16	15.6
Iron, Total, ICAP	mg/l	0.3	s	0.21	0.2	0.2	0.18	0.21	0.21	0.15	0.18	0.14	0.17	0.25	0.29
Manganese, Total, ICAP/MS	ug/l	50	s	15	18	21	25	38	47	45	**54**	**58**	**76**	**255**	**250**
Turbidity	NTU	5	s	1.9	2.2	4.1	2.9	2.3	2.8	1.7	4.6	1.1	5.1	0.75	0.85
Alkalinity	mg/l			492	507	435	449	565	594	366	380	277	288	188	196
Boron	mg/l			1.2	1.3	0.8	0.8	1.3	1.3	1.1	1.1	0.6	0.61	0.2	0.23
Bicarbonate as HCO3,calculated	mg/l			596	616	527	547	685	722	445	462	337	351	229	239
Calcium, Total, ICAP	mg/l			6.3	6.4	8.5	8.1	9.9	10	48	50	57	59	99	100
Carbonate as CO3, Calculated	mg/l			12.2	7.99	8.6	1.42	11.2	7.44	4.58	3	2.76	0.908	1.87	0.778
Hardness (Total, as CaCO3)	mg/l			23.1	23.8	33.2	31.3	44.1	44.3	260	269	249	254	375	381
Chloride	mg/l	250	s	22	21	35	33	85	85	**640**	**590**	430	440	420	400
Fluoride	mg/l	2	p	0.82	0.83	0.85	0.85	0.6	0.61	0.23	0.22	0.19	0.18	0.58	0.58
Hydroxide as OH, Calculated	mg/l			0.05	0.03	0.04	0.007	0.04	0.03	0.03	0.02	0.02	0.007	0.02	0.009
Langelier Index - 25 degree	None			0.63	0.45	0.61	-0.09	0.79	0.61	1.1	0.92	0.94	0.47	1	0.63
Magnesium, Total, ICAP	mg/l			1.8	1.9	2.9	2.7	4.7	4.7	34	35	26	26	31	32
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.3	2.8	4.1	4.4	7.4	7.7	12	12	9.4	9.9	6.4	6.5
Sodium, Total, ICAP	mg/l			240	240	230	220	310	330	420	430	290	290	200	200
Sulfate	mg/l	250	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	16	17
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	0.067	0.064	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			31.7	15.4	28.7	19.1	34.8	26.8	9	18.4	9	8.2	1.5	1.2
Carbon Dioxide	mg/l			3.77	6.17	4.2	27.5	5.45	9.11	5.62	9.24	5.35	17.6	3.64	9.54
General Physical															
Apparent Color	ACU	15	s	**350**	**600**	**350**	**400**	**350**	**600**	**70**	**70**	**60**	**50**	3	5
Lab pH	Units			8.5	8.3	8.4	7.6	8.4	8.2	8.2	8	8.1	7.6	8.1	7.7
Odor	TON	3	s	**8**	**40**	**8**	**17**	**17**	**3**	**4**	**8**	**4**	**17**	**4**	**4**
pH of CaCO3 saturation(25C)	Units			7.87	7.849	7.794	7.799	7.614	7.586	7.115	7.081	7.161	7.129	7.09	7.067
pH of CaCO3 saturation(60C)	Units			7.4	7.4	7.3	7.4	7.2	7.1	6.7	6.6	6.7	6.7	6.6	6.6
Specific Conductance	mho/cm			1040	1040	969	964	1400	1390	2510	2490	1880	1880	1720	1730
Metal															
Aluminum, Total, ICAP/MS	ug/l	1000	p	51	ND	**120**	67	42	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	1.7	2	1.4	ND	1.4	2.6	ND	ND	ND	ND	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	7.9	8.9	9.3	8.9	13	15	22	29	15	20	83	84
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	1.3	ND	1.5	ND	1.6	ND	ND	5.5	ND	ND	ND	ND
Hexavalent Chromium (Cr VI)	mg/l			ND	0.1	ND	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	14	7.9	16	11	3.1	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		1.5	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	8.8	ND	8	ND	6.6	ND	6.4	ND	5.3	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	PM-3 Madrid Zone 1 4/6/04	PM-3 Madrid Zone 1 9/21/04	PM-3 Madrid Zone 2 4/6/04	PM-3 Madrid Zone 2 9/21/04	PM-3 Madrid Zone 3 4/6/04	PM-3 Madrid Zone 3 9/21/04	PM-3 Madrid Zone 4 4/6/04	PM-3 Madrid Zone 4 9/21/04
General Mineral											
Total Dissolved Solid (TDS)	mg/l	1000	s	400	390	280	280	750	800	930	980
Cation Sum	meq/l			7.01	6.89	4.92	5.15	10.8	11.3	14.2	14.8
Anion Sum	meq/l			6.92	6.61	4.83	4.8	11.3	10.8	14.6	14.7
Iron, Total, ICAP	mg/l	0.3	s	0.12	0.063	0.14	0.13	0.11	0.11	**0.43**	**0.46**
Manganese, Total, ICAP/MS	ug/l	50	s	42	36	46	42	**62**	**62**	**320**	**320**
Turbidity	NTU	5	s	1.1	4.1	0.3	0.2	2.3	1.4	2.6	2.9
Alkalinity	mg/l			313	296	197	187	195	187	196	187
Boron	mg/l			0.37	0.38	0.099	0.12	0.1	0.13	0.28	0.34
Bicarbonate as HCO3,calculated	mg/l			380	359	239	227	237	228	238	228
Calcium, Total, ICAP	mg/l			13	12	37	39	98	100	120	120
Carbonate as CO3, Calculated	mg/l			4.93	5.86	2.46	1.86	1.22	1.18	1.55	0.743
Hardness (Total, as CaCO3)	mg/l			72.8	68.3	138	143	360	369	440	448
Chloride	mg/l	250	s	23	24	31	37	260	250	350	350
Fluoride	mg/l	2	p	0.3	0.3	0.38	0.38	0.33	0.34	0.26	0.23
Hydroxide as OH, Calculated	mg/l			0.03	0.04	0.03	0.02	0.01	0.01	0.02	0.009
Langelier Index - 25 degree	None			0.55	0.59	0.7	0.6	0.82	0.81	1	0.69
Magnesium, Total, ICAP	mg/l			9.8	9.3	11	11	28	29	34	36
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			13	12	3	3.2	5.2	5.5	6.8	7.3
Sodium, Total, ICAP	mg/l			120	120	48	51	80	87	120	130
Sulfate	mg/l	250	s	ND	ND	ND	ND	ND	ND	39	53
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			3.1	2.9	0.6	ND	0.7	0.7	0.9	0.9
Carbon Dioxide	mg/l			3.81	2.86	3.02	3.61	5.97	5.74	4.76	9.1
General Physical											
Apparent Color	ACU	15	s	**35**	**30**	5	5	5	5	5	10
Lab pH	Units			8.3	8.4	8.2	8.1	7.9	7.9	8	7.7
Odor	TON	3	s	**8**	**3**	1	2	2	2	2	**17**
pH of CaCO3 saturation(25C)	Units			7.751	7.811	7.498	7.498	7.079	7.087	6.989	7.008
pH of CaCO3 saturation(60C)	Units			7.3	7.4	7.1	7.1	6.6	6.6	6.5	6.6
Specific Conductance	mho/cm			659	629	471	466	1160	1160	1460	1490
Metal											
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	2.9	3.2	7.5	4.3
Barium, Total, ICAP/MS	ug/l	1000	p	25	25	20	20	69	69	83	84
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Hexavalent Chromium (Cr VI)	mg/l										
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	1.3	1.2
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	**13**	**11**	4.5	2.3
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	1.4	1.5	1.3	2
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	1.6	1.3	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p								

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	PM-4 Mariner Zone 1 4/18/04	PM-4 Mariner Zone 1 9/26/04	PM-4 Mariner Zone 2 4/18/04	PM-4 Mariner Zone 2 9/26/04	PM-4 Mariner Zone 3 4/18/04	PM-4 Mariner Zone 3 9/26/04	PM-4 Mariner Zone 4 4/18/04	PM-4 Mariner Zone 4 9/26/04
General Mineral											
Total Dissolved Solid (TDS)	mg/l	1000	s	340	340	**12000**	**11500**	730	720	690	680
Cation Sum	meq/l			6.05	5.91	187	170	11.9	11.1	11.2	11
Anion Sum	meq/l			5.84	5.62	179	195	11.5	10.8	10.9	10.6
Iron, Total, ICAP	mg/l	0.3	s	0.079	0.077	0.21	0.2	0.038	0.039	0.16	0.16
Manganese, Total, ICAP/MS	ug/l	50	s	33	39	**1100**	**1200**	**61**	**69**	**79**	**90**
Turbidity	NTU	5	s	0.1	0.1	1.3	0.9	1.2	1.6	0.85	0.45
Alkalinity	mg/l			253	242	152	149	162	160	190	182
Boron	mg/l			0.18	0.19	0.19	0.21	0.38	0.37	0.28	0.28
Bicarbonate as HCO3,calculated	mg/l			308	294	185	182	197	195	231	221
Calcium, Total, ICAP	mg/l			28	27	1500	1300	78	73	81	79
Carbonate as CO3, Calculated	mg/l			2.52	3.81	0.302	0.471	1.61	1.6	1.5	1.81
Hardness (Total, as CaCO3)	mg/l			119	113	5560	4730	281	265	293	280
Chloride	mg/l	250	s	27	27	**5700**	**6300**	130	120	120	120
Fluoride	mg/l	2	p	0.34	0.34	0.13	0.1	0.29	0.29	0.28	0.27
Hydroxide as OH, Calculated	mg/l			0.02	0.03	0.004	0.007	0.02	0.02	0.02	0.02
Langelier Index - 25 degree	None			0.59	0.76	1.4	1.5	0.84	0.81	0.83	0.9
Magnesium, Total, ICAP	mg/l			12	11	440	360	21	20	22	20
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			7.3	6.9	54	52	7	6.4	6.6	6.6
Sodium, Total, ICAP	mg/l			80	80	1700	1700	140	130	120	120
Sulfate	mg/l	250	s	ND	ND	710	700	220	200	180	170
Surfactants	mg/l	0.5	s	ND	ND	0.087	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			1.6	1.6	1.2	1.1	1.5	1.5	1.1	1.1
Carbon Dioxide	mg/l			4.89	2.95	14.7	9.14	3.13	3.1	4.62	3.51
General Physical											
Apparent Color	ACU	15	s	**15**	10	5	5	10	5	5	3
Lab pH	Units			8.1	8.3	7.4	7.6	8.1	8.1	8	8.1
Odor	TON	3	s	**3**	1	**3**	1	**3**	1	**4**	1
pH of CaCO3 saturation(25C)	Units			7.509	7.545	6.002	6.071	7.258	7.292	7.173	7.203
pH of CaCO3 saturation(60C)	Units			7.1	7.1	5.6	5.6	6.8	6.8	6.7	6.8
Specific Conductance	mho/cm			569	504	16310	15400	1140	1040	1090	976
Metal											
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	**68**	ND	ND	ND	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	22	22	250	240	100	100	50	54
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	4.1	3	4.1	3.4	2.6	2	2.7	2.5
Hexavalent Chromium (Cr VI)	mg/l										
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	3	7.2	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	25	67	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	42	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	0.52	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	5.8	ND	ND	ND	ND	ND
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p								

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	Westchester #1 Zone 1 5/11/04	Westchester #1 Zone 1 9/15/04	Westchester #1 Zone 2 5/11/04	Westchester #1 Zone 2 9/15/04	Westchester #1 Zone 3 5/11/04	Westchester #1 Zone 3 9/15/04	Westchester #1 Zone 4 5/11/04	Westchester #1 Zone 4 9/15/04	Westchester #1 Zone 5 5/11/04	Westchester #1 Zone 5 9/15/04
General Mineral													
Total Dissolved Solid (TDS)	mg/l	1000	s	**1380**	**1390**	720	730	600	620	580	590	550	560
Cation Sum	meq/l			22.6	23	13	12.9	10.6	10.9	10.5	10.5	9.9	10.1
Anion Sum	meq/l			22.4	22.1	12.6	12	10.6	10.4	10.2	10.1	9.69	9.62
Iron, Total, ICAP	mg/l	0.3	s	0.28	0.28	0.14	0.13	0.29	0.27	0.15	0.15	0.28	0.29
Manganese, Total, ICAP/MS	ug/l	50	s	**56**	**55**	**62**	**61**	**200**	**180**	**120**	**130**	**230**	**230**
Turbidity	NTU	5	s	1.2	1	1.3	2.9	0.7	0.3	0.4	0.55	0.8	0.75
Alkalinity	mg/l			938	905	532	504	407	404	349	330	309	295
Boron	mg/l			2.3	2.4	0.85	0.83	0.36	0.4	0.25	0.24	0.23	0.22
Bicarbonate as HCO3,calculated	mg/l			1140	1100	647	613	495	492	424	402	376	359
Calcium, Total, ICAP	mg/l			20	19	31	31	53	52	71	71	67	68
Carbonate as CO3, Calculated	mg/l			5.88	14.3	4.2	5.02	3.22	3.2	3.47	2.61	1.54	1.85
Hardness (Total, as CaCO3)	mg/l			108	105	152	147	231	225	297	297	278	281
Chloride	mg/l	250	s	130	140	68	67	65	71	62	69	67	73
Fluoride	mg/l	2	p	0.26	0.26	0.26	0.25	0.28	0.27	0.26	0.25	0.33	0.31
Hydroxide as OH, Calculated	mg/l			0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
Langelier Index - 25 degree	None			0.81	1.2	0.86	0.93	0.97	0.96	1.1	1	0.76	0.84
Magnesium, Total, ICAP	mg/l			14	14	18	17	24	23	29	29	27	27
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			18	19	15	15	11	12	9.3	9.5	7.6	7.8
Sodium, Total, ICAP	mg/l			460	470	220	220	130	140	99	100	95	98
Sulfate	mg/l	250	s	ND	ND	ND	ND	28	16	69	73	77	79
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			43.2	31	7.9	8	3	3.4	1.8	1.7	1.4	1.4
Carbon Dioxide	mg/l			28.7	11	12.9	9.74	9.9	9.84	6.74	8.04	11.9	9.04
General Physical													
Apparent Color	ACU	15	s	**700**	**500**	**80**	**60**	**20**	**20**	10	10	10	5
Lab pH	Units			7.9	8.3	8	8.1	8	8	8.1	8	7.8	7.9
Odor	TON	3	s	**8**	**3**	**8**	**3**	**17**	**4**	**8**	1	**17**	**4**
pH of CaCO3 saturation(25C)	Units			7.087	7.125	7.143	7.166	7.026	7.037	6.966	6.99	7.044	7.057
pH of CaCO3 saturation(60C)	Units			6.6	6.7	6.7	6.7	6.6	6.6	6.5	6.5	6.6	6.6
Specific Conductance	mho/cm			2060	2040	1160	1140	988	976	957	934	915	895
Metal													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	1.1	ND	ND	ND	2.7	1.8
Barium, Total, ICAP/MS	ug/l	1000	p	67	83	120	130	57	60	67	74	51	60
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	3.7	ND	1.5	5.8	7	4.2	6	3.4	5.9	2.8
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	11	ND	7	ND	16	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p										

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	Wilmington #1 Zone 1 4/8/04	Wilmington #1 Zone 1 9/9/04	Wilmington #1 Zone 2 4/8/04	Wilmington #1 Zone 2 9/9/04	Wilmington #1 Zone 3 4/8/04	Wilmington #1 Zone 3 9/9/04	Wilmington #1 Zone 4 4/8/04	Wilmington #1 Zone 4 9/9/04	Wilmington #1 Zone 5 4/8/04	Wilmington #1 Zone 5 9/9/04
General Mineral													
Total Dissolved Solid (TDS)	mg/l	1000	s	600	670	**1440**	**1410**	**1440**	**1800**	**1690**	**1740**	920	**1000**
Cation Sum	meq/l			10	10.2	22.5	20.2	22.3	26.3	27.5	27.6	15.3	16.3
Anion Sum	meq/l			9.82	9.94	23.5	20.3	23.1	27.3	27.8	28.7	14.6	16.1
Iron, Total, ICAP	mg/l	0.3	s	0.013	ND	0.045	0.037	0.011	ND	0.021	0.024	0.16	0.13
Manganese, Total, ICAP/MS	ug/l	50	s	26	24	26	23	8.1	8.8	23	23	**78**	**73**
Turbidity	NTU	5	s	0.25	0.2	0.1	0.15	0.3	0.4	0.15	0.35	13	10
Alkalinity	mg/l			138	130	138	135	137	138	147	142	174	184
Boron	mg/l			0.14	0.14	0.21	0.2	0.24	0.24	0.27	0.26	0.22	0.23
Bicarbonate as HCO3,calculated	mg/l			168	158	168	164	167	168	179	173	212	224
Calcium, Total, ICAP	mg/l			61	63	190	170	150	190	120	130	110	110
Carbonate as CO3, Calculated	mg/l			1.37	1.29	0.867	0.847	0.172	0.218	1.16	0.893	0.69	1.46
Hardness (Total, as CaCO3)	mg/l			231	240	660	585	539	672	473	518	431	435
Chloride	mg/l	250	s	250	260	**680**	**570**	**710**	**870**	**710**	**740**	290	330
Fluoride	mg/l	2	p	0.15	0.13	0.07	0.07	0.08	0.07	0.09	0.09	0.11	0.1
Hydroxide as OH, Calculated	mg/l			0.02	0.02	0.01	0.01	0.003	0.003	0.02	0.01	0.009	0.02
Langelier Index - 25 degree	None			0.67	0.65	0.96	0.9	0.15	0.36	0.89	0.81	0.62	0.95
Magnesium, Total, ICAP	mg/l			19	20	45	39	40	48	42	47	38	39
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			7.4	7.7	7.8	7.1	8	8.5	9.4	9.6	7.2	7.9
Sodium, Total, ICAP	mg/l			120	120	210	190	260	290	410	390	150	170
Sulfate	mg/l	250	s	ND	ND	74	71	18	ND	230	240	140	150
Surfactants	mg/l	0.5	s	0.29	0.504	0.44	0.382	0.459	0.457	0.202	0.351	0.831	1.14
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			3	2.9	2.4	2.1	3.4	2.3	1.8	1.4	5.9	6.3
Carbon Dioxide	mg/l			2.67	2.51	4.23	4.13	21.1	16.8	3.58	4.36	8.46	4.48
General Physical													
Apparent Color	ACU	15	s	3	5	5	3	10	10	3	3	5	10
Lab pH	Units			8.1	8.1	7.9	7.9	7.2	7.3	8	7.9	7.7	8
Odor	TON	3	s	**100**	**17**	**17**	**40**	**2000**	**17**	**3**	**67**	**3**	**200**
pH of CaCO3 saturation(25C)	Units			7.434	7.447	6.941	7	7.046	6.941	7.113	7.093	7.077	7.053
pH of CaCO3 saturation(60C)	Units			7	7	6.5	6.6	6.6	6.5	6.7	6.6	6.6	6.6
Specific Conductance	mho/cm			1100	1110	2410	2120	2460	2780	2920	2820	1560	1640
Metal													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	3.2	ND	3.9	ND	4.8	ND	3.6	ND	2.1	ND
Barium, Total, ICAP/MS	ug/l	1000	p	12	11	14	12	25	28	58	57	100	99
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	6.5	6.9	5.4	7.5	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	16	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	1.8	4.6
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	1.8	4.7
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.7
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p										

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2003/2004
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Water Quality Constituents	Units	MCL	MCL Type	Wilmington #2 Zone 1 4/13/04	Wilmington #2 Zone 1 9/8/04	Wilmington #2 Zone 2 3/16/04	Wilmington #2 Zone 2 8/31/04	Wilmington #2 Zone 3 4/13/04	Wilmington #2 Zone 3 9/8/04	Wilmington #2 Zone 4 4/13/04	Wilmington #2 Zone 4 9/8/04	Wilmington #2 Zone 5 4/13/04	Wilmington #2 Zone 5 9/8/04
General Mineral													
Total Dissolved Solid (TDS)	mg/l	1000	s	540	540	**1400**	**1430**	440	430	**2270**	**2230**	**7910**	**7540**
Cation Sum	meq/l			8.75	9.19	24.2	25	7.27	7.63	35.9	35.4	117	114
Anion Sum	meq/l			8.5	8.46	25.1	24.9	7.44	7.3	36.2	36	116	127
Iron, Total, ICAP	mg/l	0.3	s	0.077	0.086	0.077	0.082	0.026	0.022	0.01	0.029	0.034	0.024
Manganese, Total, ICAP/MS	ug/l	50	s	5	5.1	16	21	13	13	24	21	**100**	**110**
Turbidity	NTU	5	s	1	1.7	1	0.6	0.35	0.5	0.35	0.6	3.9	1.8
Alkalinity	mg/l			366	364	464	438	202	195	257	246	181	174
Boron	mg/l			0.61	0.66	1.7	1.7	0.24	0.27	0.53	0.71	0.64	0.64
Bicarbonate as HCO3,calculated	mg/l			441	441	564	532	245	237	313	300	221	212
Calcium, Total, ICAP	mg/l			3.3	3.4	32	35	29	29	140	130	430	410
Carbonate as CO3, Calculated	mg/l			14.4	9.06	4.61	5.48	2.52	2.44	1.02	0.617	0.72	0.69
Hardness (Total, as CaCO3)	mg/l			17.7	18	175	190	118	114	621	576	1900	1770
Chloride	mg/l	250	s	40	40	**560**	**570**	120	120	**1100**	**1100**	**3600**	**4000**
Fluoride	mg/l	2	p	0.96	0.97	0.33	0.33	0.23	0.23	0.3	0.32	0.19	0.17
Hydroxide as OH, Calculated	mg/l			0.09	0.05	0.02	0.03	0.03	0.03	0.009	0.005	0.009	0.009
Langelier Index - 25 degree	None			0.42	0.23	0.91	1	0.61	0.59	0.9	0.65	1.2	1.2
Magnesium, Total, ICAP	mg/l			2.3	2.3	23	25	11	10	66	61	200	180
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			5.1	5.1	12	12	5.3	5.3	15	14	32	27
Sodium, Total, ICAP	mg/l			190	200	470	480	110	120	530	540	1800	1800
Sulfate	mg/l	250	s	ND	ND	ND	ND	ND	ND	ND	ND	540	500
Surfactants	mg/l	0.5	s	ND	ND	0.087	ND	ND	ND	0.064	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			17.2	9.5	8	17.4	4.2	3.8	3.9	5.9	1.5	1.5
Carbon Dioxide	mg/l			1.76	2.79	8.96	6.71	3.09	2.99	12.5	19	8.82	8.46
General Physical													
Apparent Color	ACU	15	s	**300**	**300**	**120**	**120**	**35**	**25**	**50**	**50**	**15**	10
Lab pH	Units			8.7	8.5	8.1	8.2	8.2	8.2	7.7	7.5	7.7	7.7
Odor	TON	3	s	**8**	**8**	**4**	**8**	**4**	**4**	**400**	**400**	**8**	**3**
pH of CaCO3 saturation(25C)	Units			8.282	8.269	7.189	7.175	7.593	7.608	6.803	6.854	6.467	6.506
pH of CaCO3 saturation(60C)	Units			7.8	7.8	6.7	6.7	7.1	7.2	6.4	6.4	6	6.1
Specific Conductance	mho/cm			840	760	2420	2540	780	726	3920	3520	11700	10800
Metal													
Aluminum, Total, ICAP/MS	ug/l	1000	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	4.1	ND	1.5	5.1	ND	21	ND
Barium, Total, ICAP/MS	ug/l	1000	p	5.6	5.8	48	57	14	13	100	99	95	93
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	1.8	2.2	ND	4.2	ND	ND	1.6	ND	ND	ND
Hexavalent Chromium (Cr VI)	mg/l												
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	2.1	3.7	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l	15		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	5.3	8	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	21	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	7.4	ND	ND	ND	ND	ND	3.6	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	8.1	ND	6	ND	ND	ND	6.3	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	ug/L	13	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perchlorate	ug/l	6	p										

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.4
Priority Contaminated Sites in Central and West Coast Basins

Map Number (See Figure 4.33)	Site Name	City	Lead Agency
1	Angeles Chemical Company Inc	Santa Fe Springs	DTSC
2	McKesson Chemical Company	Santa Fe Springs	DTSC
3	Basin By-Products	Wilmington	DTSC
4	Montrose Chemical Corporation	Torrance	DTSC
5	Stauffer Chemical	Carson	DTSC
6	Chrome Crankshaft	Bell Gardens	DTSC
7	J&S Chrome Plating	Bell Gardens	DTSC
8	Wilmington/Gramercy Right-of-Way	Los Angeles	DTSC
9	Hard Chrome Products	Los Angeles	DTSC
10	Los Angeles Academy	Los Angeles	DTSC
11	Ashland Chemical	Santa Fe Springs	RWQCB-LA
12	Boeing Realty Corp C-1 Facility	Long Beach	RWQCB-LA
13	Boeing Realty Corp C-6 Facility	Los Angeles	RWQCB-LA
14	Honeywell El Segundo	El Segundo	RWQCB-LA
15	Honeywell Sepulveda	Los Angeles	RWQCB-LA
16	Industrial Polychemical	Gardena	RWQCB-LA
17	Master Sun Cleaners	Gardena	RWQCB-LA
18	Soco-Lynch	Vernon	RWQCB-LA
19	Trico Industries	Torrance	RWQCB-LA
20	TRW Hawthorne Facility	Hawthorne	RWQCB-LA
21	Golden West Refinery	Santa Fe Springs	RWQCB-LA
22	Thrifty Oil Service Station #10	Montebello	RWQCB-LA
23	Thrifty Oil Service Station #289	Pico Rivera	RWQCB-LA
24	ARCO Whittier	Whittier	RWQCB-LA
25	Cooper Drum Company	South Gate	EPA
26	Del Amo Facility	Los Angeles	EPA
27	Omega Chemical	Whittier	EPA
28	Operating Industries Inc Landfill	Monterey Park	EPA
29	Pemaco Maywood	Maywood	EPA
30	Waste Disposal Inc	Santa Fe Springs	EPA
31	Former Fairchild Controls	Manhattan Beach	RWQCB-LA
32	Cenco Refinery	Santa Fe Springs	RWQCB-LA
33	ExxonMobil Torrance	Torrance	RWQCB-LA
34	Shell Oil Products US	Carson/Wilmington	RWQCB-LA
35	BP/ARCO	Carson	RWQCB-LA
36	Conoco Phillips	Carson	RWQCB-LA

FIGURES

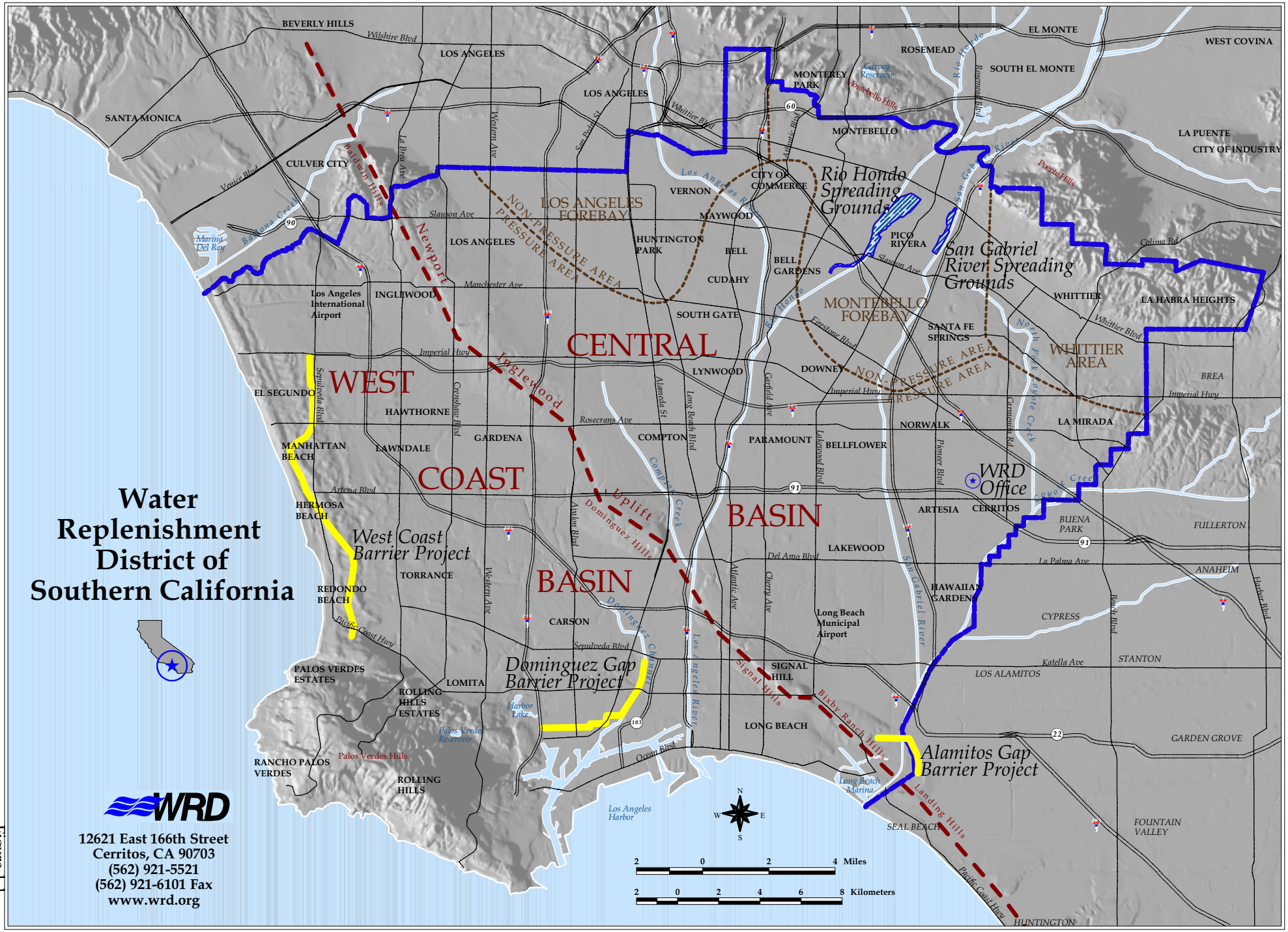
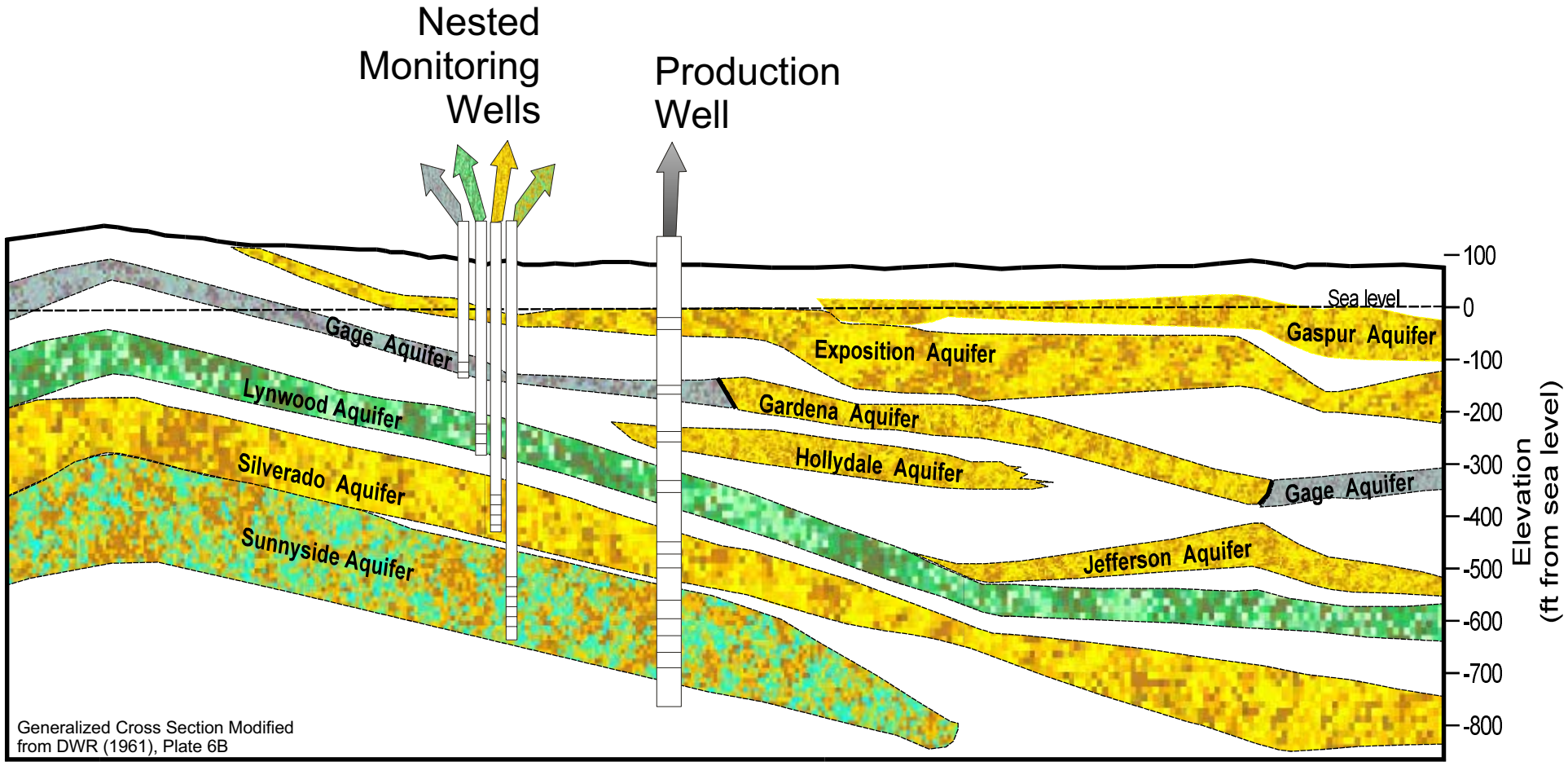

Water Replenishment District of Southern California
WRD
12621 East 166th Street
Cerritos, CA 90703
(562) 921-5521
(562) 921-6101 Fax
www.wrd.org
WEST
CENTRAL
COAST
BASIN
BASIN
LOS ANGELES FOREBAY
MONTEBELLO FOREBAY
NON-PRESSURE AREA
PRESSURE AREA
NON-PRESSURE AREA
WHITTIER AREA
Rio Hondo Spreading Grounds
San Gabriel River Spreading Grounds
WRD Office
West Coast Barrier Project
Dominguez Gap Barrier Project
Alamitos Gap Barrier Project
Newport
Inglewood
Uplift
Dominguez Hills
Signal Hills
Bixby Ranch Hills
Landing Hills
Baldwin Hills
Palos Verdes Hills
Montebello Hills
Puente Hills
BEVERLY HILLS
SANTA MONICA
CULVER CITY
LOS ANGELES
INGLEWOOD
Los Angeles International Airport
HAWTHORNE
EL SEGUNDO
MANHATTAN BEACH
HERMOSA BEACH
REDONDO BEACH
TORRANCE
GARDENA
LAWNDALE
CARSON
LOMITA
PALOS VERDES ESTATES
ROLLING HILLS ESTATES
RANCHO PALOS VERDES
ROLLING HILLS
VERNON
CITY OF COMMERCE
MAYWOOD
HUNTINGTON PARK
BELL
BELL GARDENS
CUDAHY
SOUTH GATE
LYNWOOD
COMPTON
PARAMOUNT
DOWNEY
SANTA FE SPRINGS
PICO RIVERA
WHITTIER
LA HABRA HEIGHTS
LA MIRADA
NORWALK
BELLFLOWER
ARTESIA
CERRITOS
LAKEWOOD
HAWAIIAN GARDENS
Long Beach Municipal Airport
LONG BEACH
SIGNAL HILL
LOS ALAMITOS
CYPRESS
STANTON
GARDEN GROVE
FOUNTAIN VALLEY
SEAL BEACH
HUNTINGTON
BUENA PARK
FULLERTON
ANAHEIM
BREA
MONTEREY PARK
ROSEMEAD
EL MONTE
SOUTH EL MONTE
WEST COVINA
MONTEBELLO
LA PUENTE
CITY OF INDUSTRY
Los Angeles Harbor
Long Beach Marina
Harbor Lake
Palos Verdes Reservoir
Carson Reservoir
Los Angeles River
San Gabriel River
Rio Hondo
Coyote Creek
Compton Creek
Dominguez Channel
Marina Del Rey
Ballona Creek
Wilshire Blvd
Venice Blvd
Slauson Ave
Manchester Ave
Imperial Hwy
Rosecrans Ave
Artesia Blvd
Pacific Coast Hwy
Sepulveda Blvd
Ocean Blvd
Del Amo Blvd
La Palma Ave
Katella Ave
Whittier Blvd
Firestone Blvd
Colima Rd
Western Ave
Crenshaw Blvd
Alameda St
Long Beach Blvd
Garfield Ave
Lakewood Blvd
Pioneer Blvd
Carmenita Rd
Beach Blvd
Harbor Blvd
Avalon Blvd
Cherry Ave
Atlantic Ave
Rosemead Blvd
Rio Hondo
San Gabriel River
Los Angeles River
90
60
91
103
22
N
W
E
S
2 0 2 4 Miles
2 0 2 4 6 8 Kilometers

Figure 1.1

NESTED WELLS versus PRODUCTION WELLS FOR AQUIFER-SPECIFIC DATA



Production wells are typically perforated across multiple aquifers producing an average water quality. Nested monitoring wells are screened in a portion of a specific aquifer, providing water quality and water level information for the specific zone.

WRD

Figure 1.2

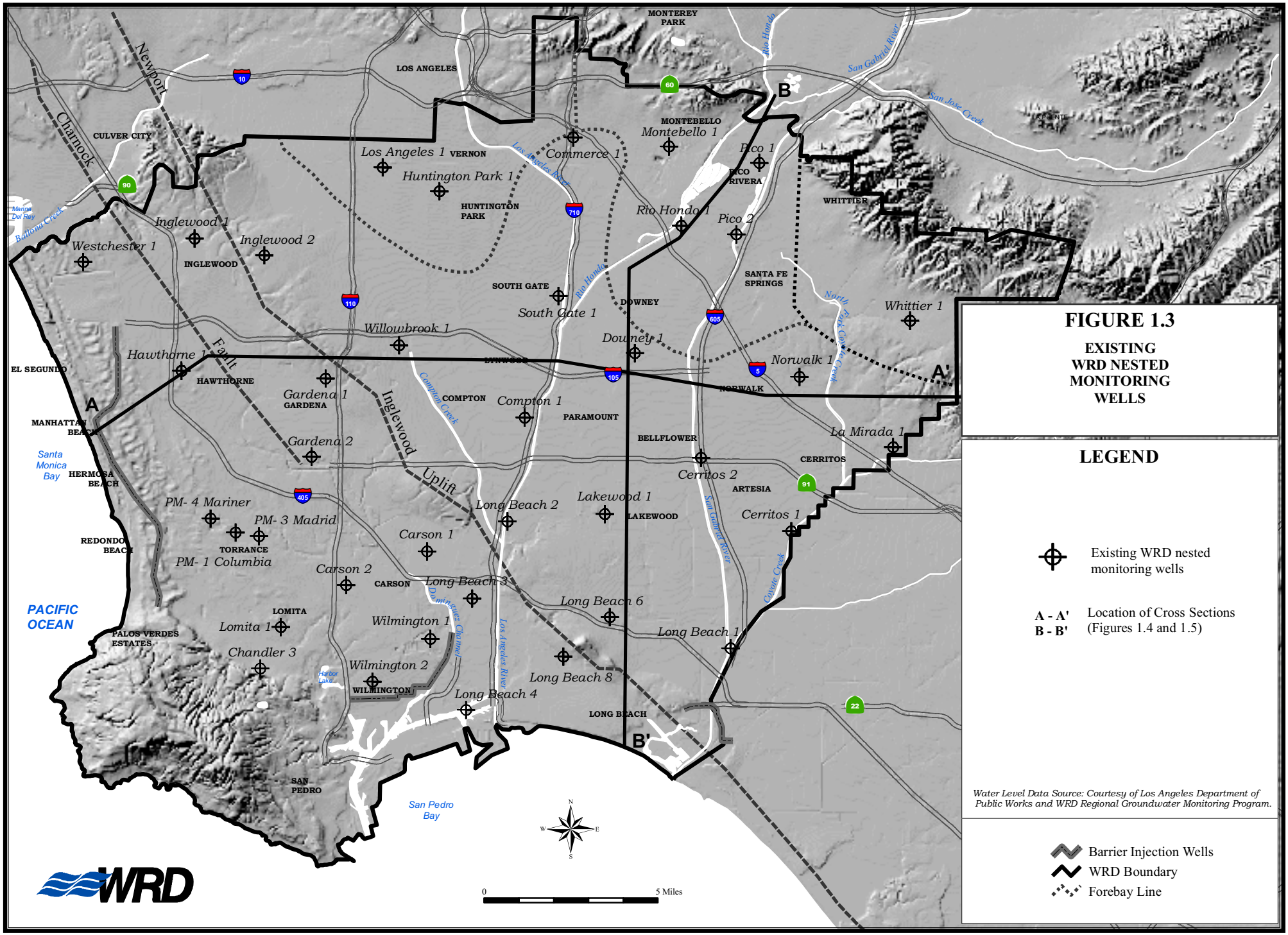
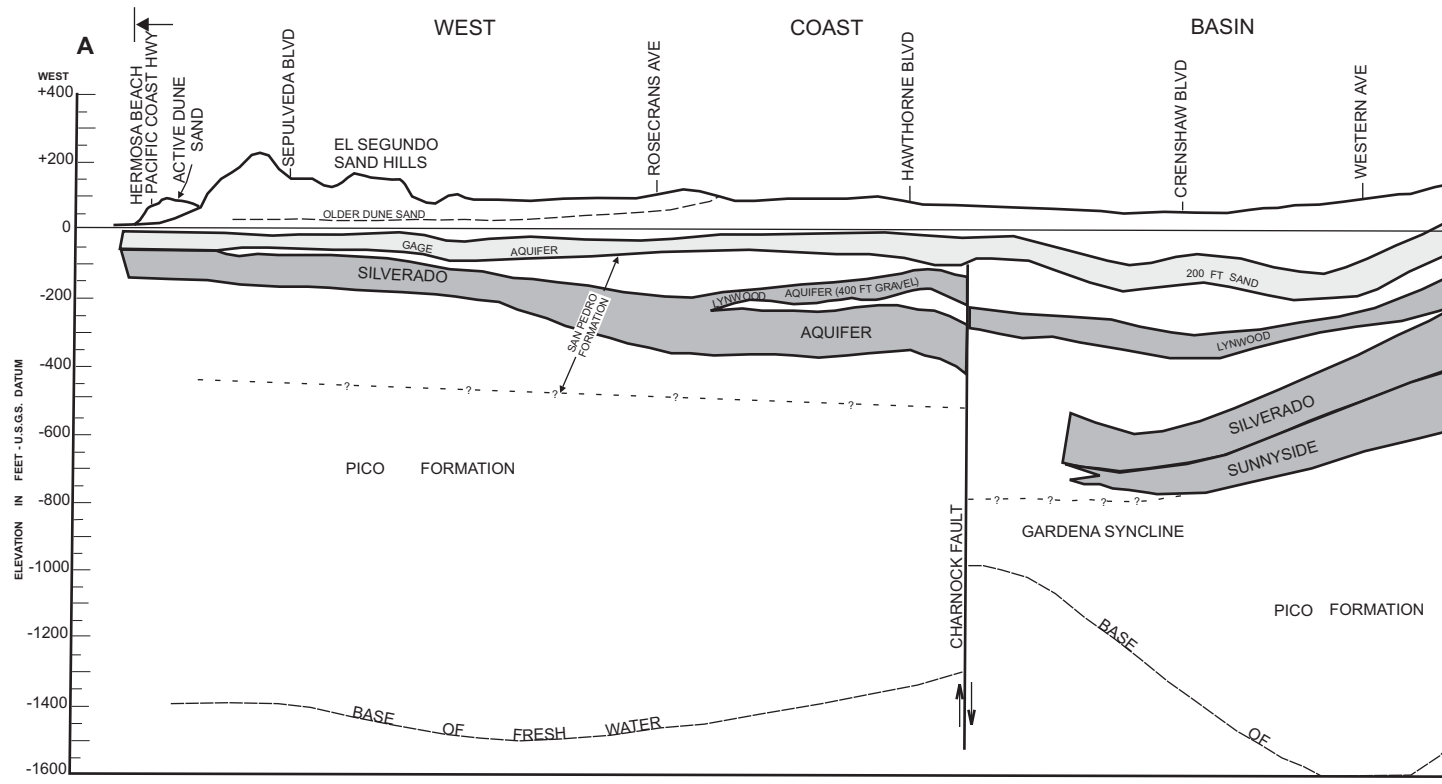
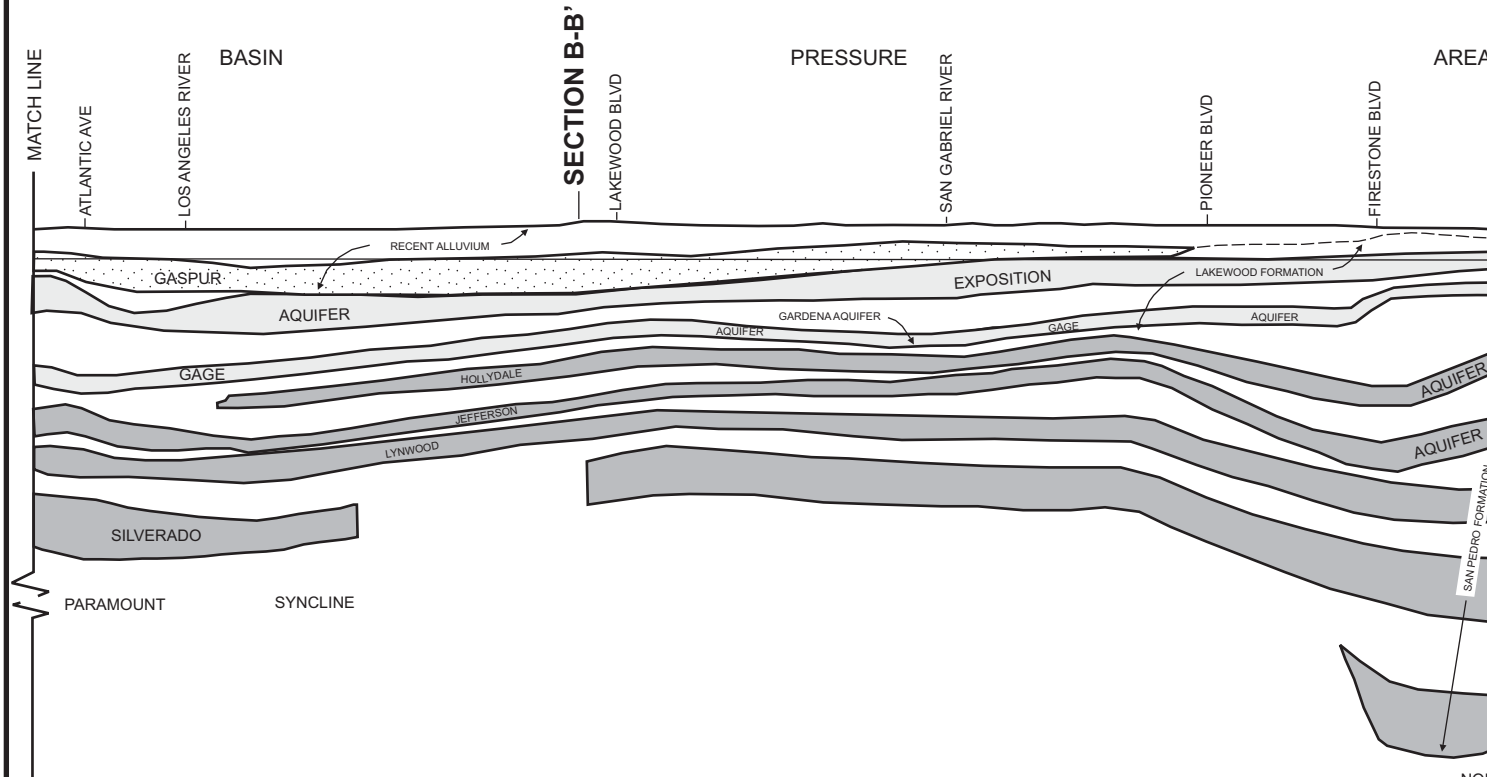
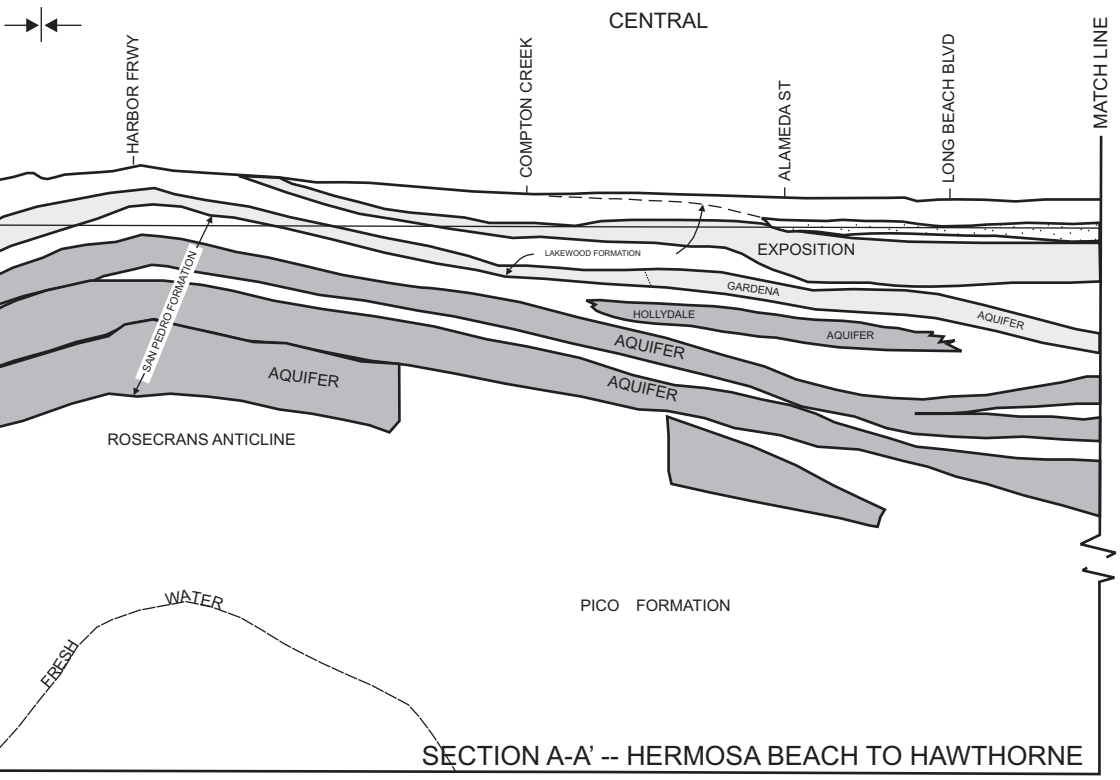


FIGURE 1.3
EXISTING
WRD NESTED
MONITORING
WELLS
LEGEND
Existing WRD nested monitoring wells
A - A' Location of Cross Sections
B - B' (Figures 1.4 and 1.5)
Water Level Data Source: Courtesy of Los Angeles Department of Public Works and WRD Regional Groundwater Monitoring Program.
Barrier Injection Wells
WRD Boundary
Forebay Line
0
5 Miles
WRD
PACIFIC OCEAN
Santa Monica Bay
San Pedro Bay
Newport
Charnock
Fault
Inglewood
Uplift
Los Angeles 1
Huntington Park 1
Commerce 1
Montebello 1
Pico 1
Pico 2
Rio Hondo 1
Inglewood 1
Inglewood 2
Westchester 1
Willowbrook 1
Hawthorne 1
Gardena 1
Gardena 2
South Gate 1
Downey 1
Norwalk 1
Whittier 1
Compton 1
La Mirada 1
Cerritos 2
Cerritos 1
Lakewood 1
Long Beach 2
Long Beach 3
Long Beach 6
Long Beach 1
Long Beach 8
Long Beach 4
Carson 1
Carson 2
Wilmington 1
Wilmington 2
Lomita 1
Chandler 3
PM- 4 Mariner
PM- 3 Madrid
PM- 1 Columbia
LOS ANGELES
MONTEREY PARK
MONTEBELLO
VERNON
HUNTINGTON PARK
CULVER CITY
PICO RIVERA
WHITTIER
SANTA FE SPRINGS
SOUTH GATE
DOWNEY
NORWALK
LYNWOOD
COMPTON
PARAMOUNT
BELLFLOWER
CERRITOS
ARTESIA
LAKEWOOD
LONG BEACH
CARSON
WILMINGTON
HAWTHORNE
INGLEWOOD
GARDENA
TORRANCE
REDONDO BEACH
HERMOSA BEACH
MANHATTAN BEACH
EL SEGUNDO
LOMITA
PALOS VERDES ESTATES
SAN PEDRO
A
A'
B
B'
Los Angeles River
Rio Hondo
San Gabriel River
San Jose Creek
Compton Creek
North Fork Coyote Creek
Coyote Creek
Dominguez Channel
Harbor Lake
Marina Del Rey
Ballona Creek

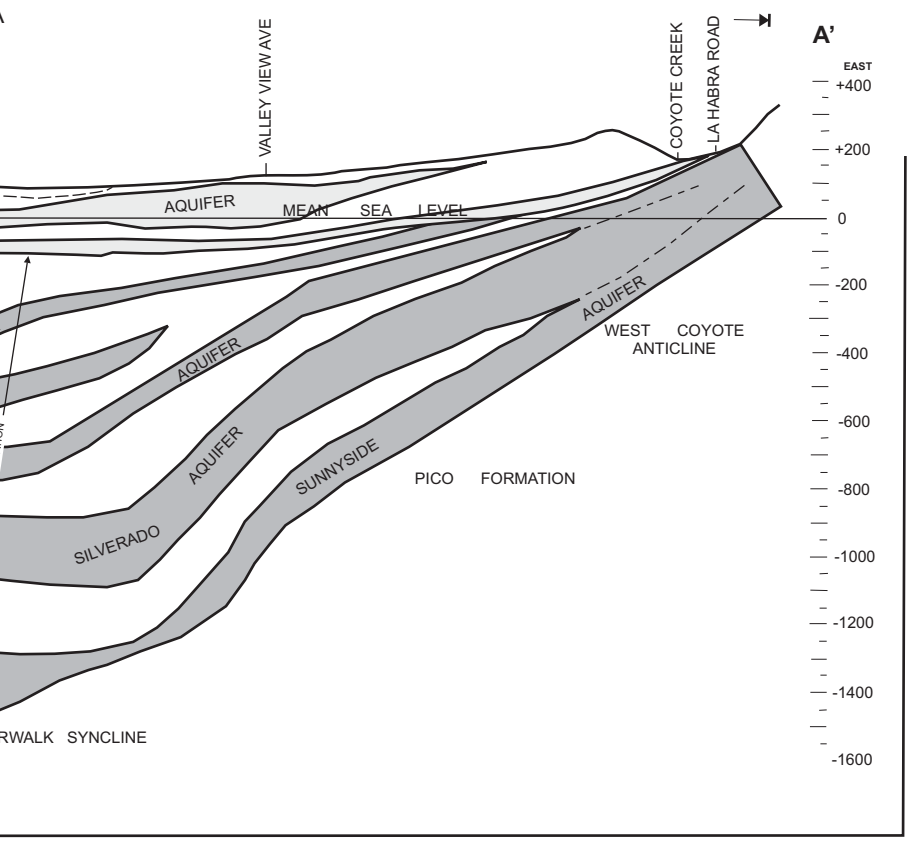




AND EASTERLY TO ORANGE COUNTY LINE SOUTH OF LA HABRA



SECTION A-A' -- HERMOSA BEACH TO HAWTHORNE



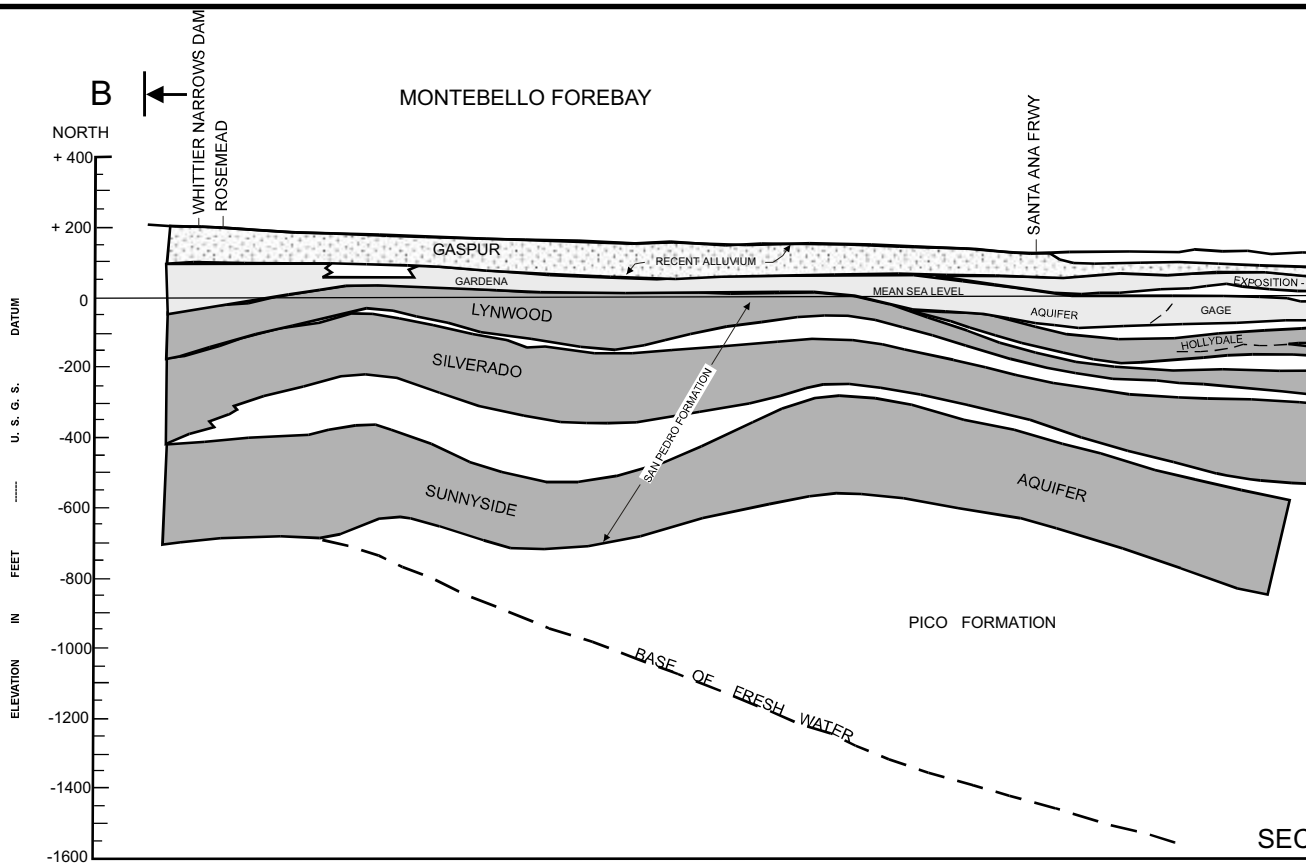
LEGEND

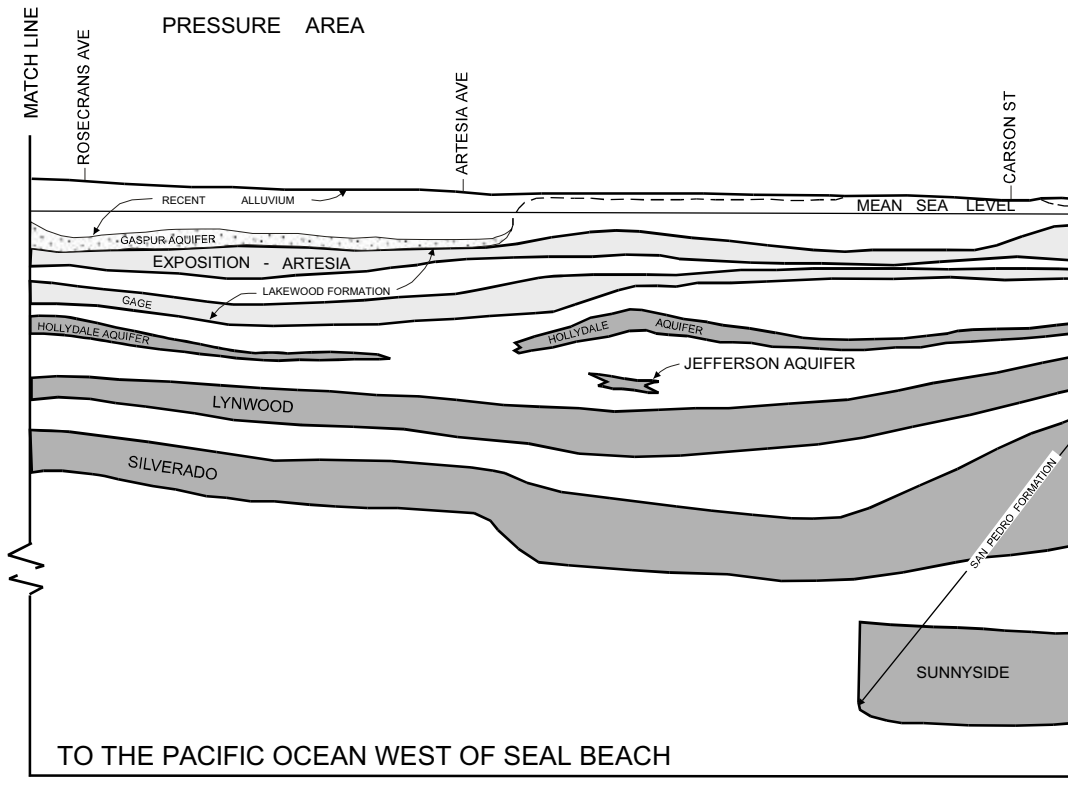
- AQUICLUDES AND DEEPER UNDIFFERENTIATED FORMATIONS
- AQUIFERS IN RECENT ALLUVIUM (INCLUDES THE GASPUR AND BALLONA AQUIFERS)
- AQUIFERS IN LAKEWOOD FORMATION (INCLUDES THE ARTESIA, EXPOSITION, GAGE, AND GARDENA AQUIFERS)
- AQUIFERS IN THE SAN PEDRO FORMATION (INCLUDES THE HOLLYDALE, JEFFERSON, LYNWOOD, SILVERADO AND SUNNYSIDE AQUIFERS)

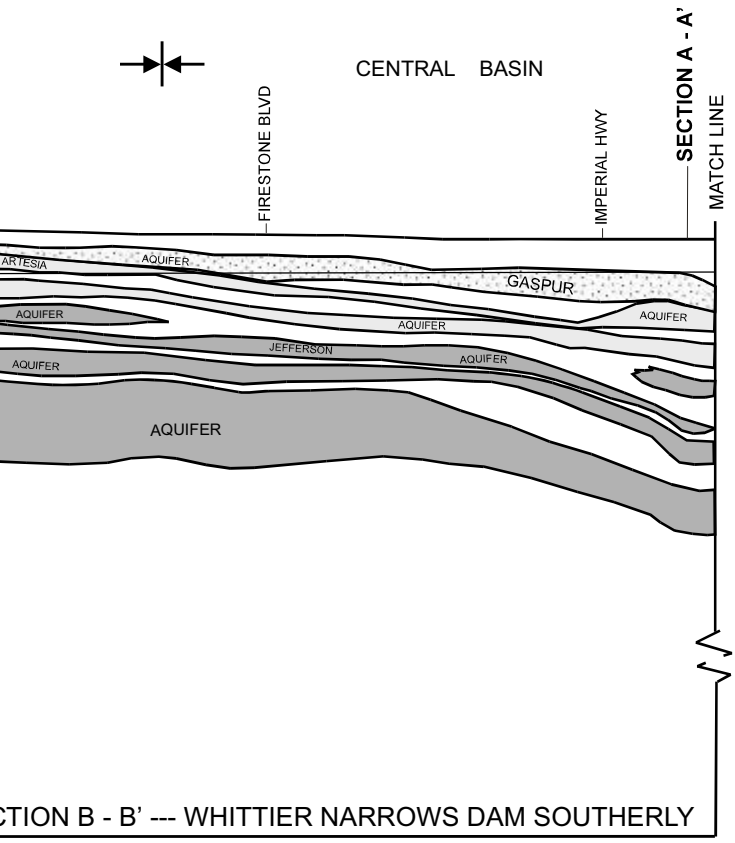
IDEALIZED GEOLOGIC CROSS SECTION AA'

Adapted from
CDWR Bull. 104 App. B

FIGURE 1.4

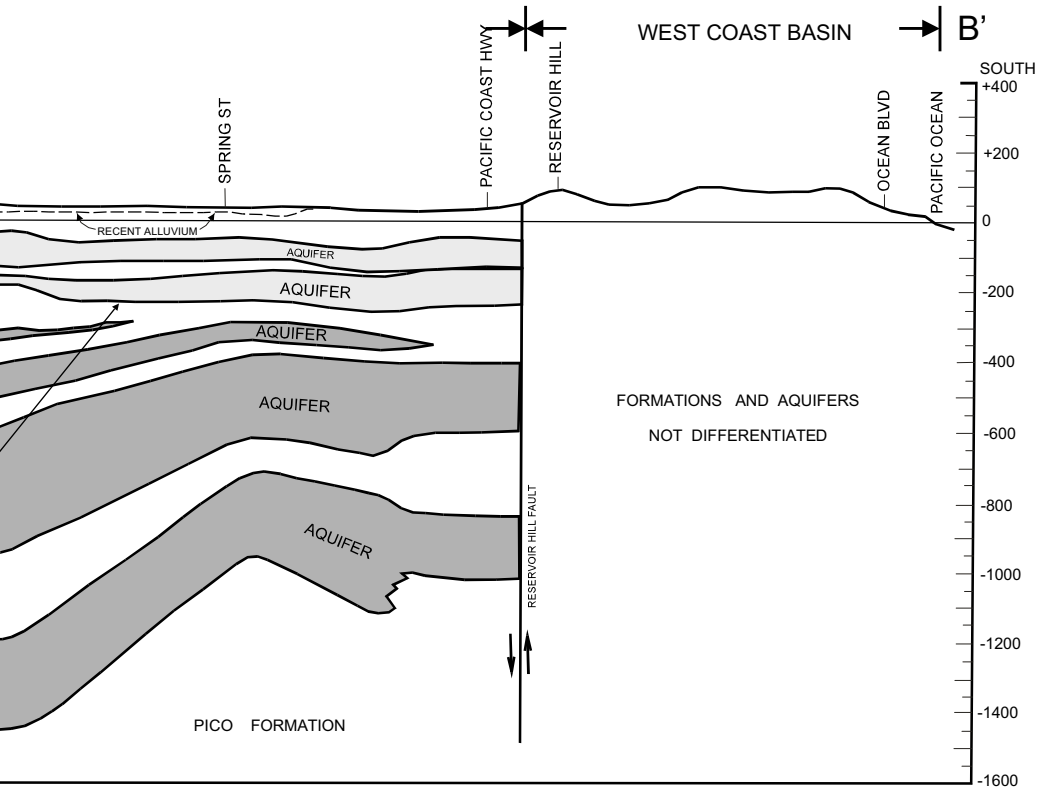

B
NORTH
MONTEBELLO FOREBAY
WHITTIER NARROWS DAM
ROSEMEAD
SANTA ANA FRWY
ELEVATION IN FEET ----- U. S. G. S. DATUM
+ 400
+ 200
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
GASPUR
RECENT ALLUVIUM
GARDENA
MEAN SEA LEVEL
EXPOSITION -
LYNWOOD
AQUIFER
GAGE
HOLLYDALE
SILVERADO
SAN PEDRO FORMATION
SUNNYSIDE
AQUIFER
PICO FORMATION
BASE OF FRESH WATER
SEC


MATCH LINE
PRESSURE AREA
ROSECRANS AVE
ARTESIA AVE
CARSON ST
RECENT ALLUVIUM
MEAN SEA LEVEL
GASPUR AQUIFER
EXPOSITION - ARTESIA
LAKEWOOD FORMATION
GAGE
HOLLYDALE AQUIFER
HOLLYDALE AQUIFER
JEFFERSON AQUIFER
LYNWOOD
SILVERADO
SAN PEDRO FORMATION
SUNNYSIDE
TO THE PACIFIC OCEAN WEST OF SEAL BEACH



LEGEND

- AQUICLUDES AND DEEPER UNDIFFERENTIATED FORMATIONS
- AQUIFERS IN RECENT ALLUVIUM (INCLUDES THE GASPUR AND BALLONA AQUIFERS)
- AQUIFERS IN LAKEWOOD FORMATION (INCLUDES THE ARTESIA, EXPOSITION, GAGE, AND GARDENA AQUIFERS)
- AQUIFERS IN THE SAN PEDRO FORMATIO (INCLUDES THE HOLLYDALE, JEFFERSON, LYNWOOD, SILVERADO AND SUNNYSIDE AQUIFERS)



IDEALIZED GEOLOGIC CROSS SECTION BB'

Adapted from
CDWR Bull. 104 App. B

FIGURE 1.5

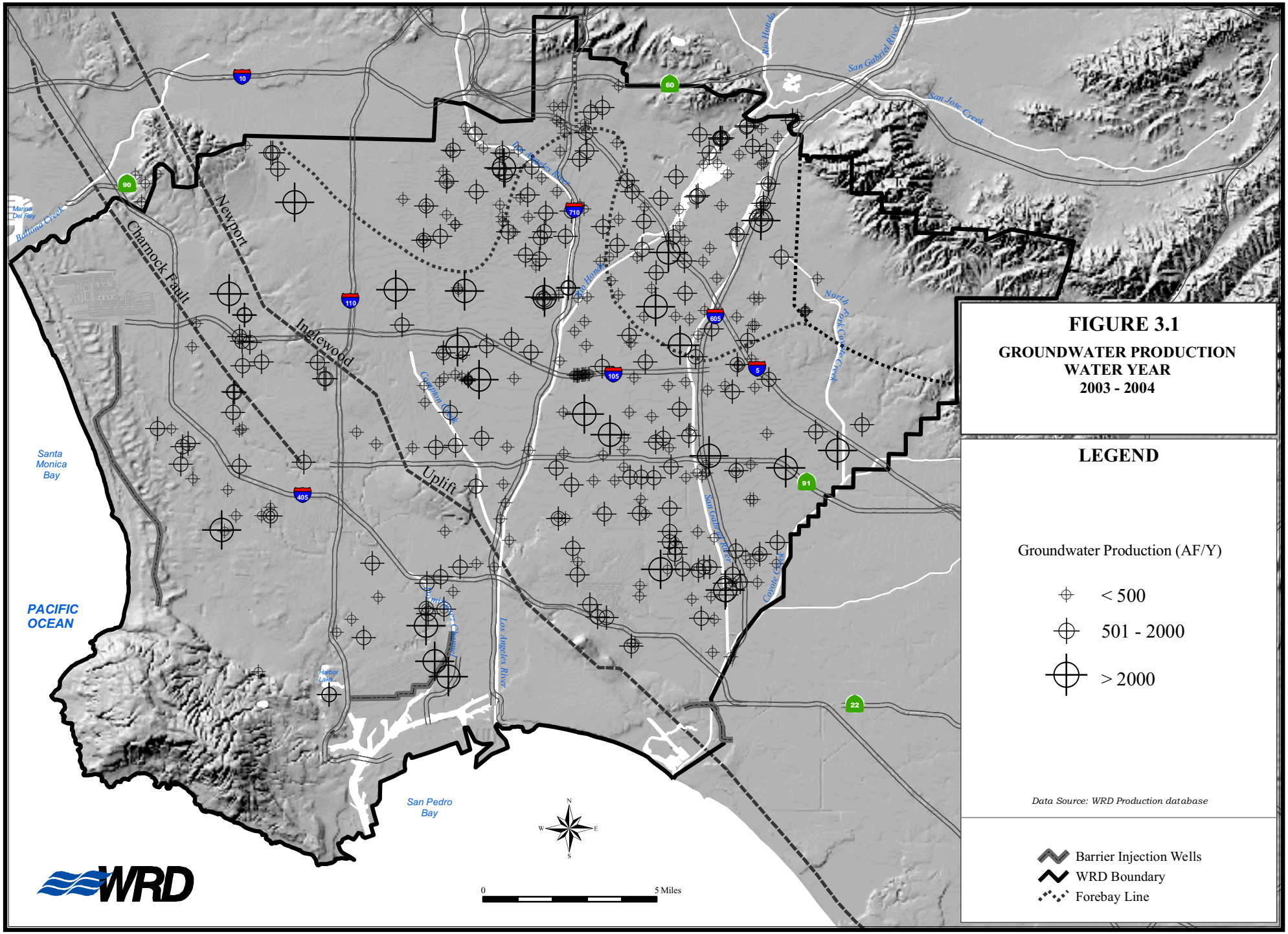


FIGURE 3.1
GROUNDWATER PRODUCTION
WATER YEAR
2003 - 2004
LEGEND
Groundwater Production (AF/Y)
< 500
501 - 2000
> 2000
Data Source: WRD Production database
Barrier Injection Wells
WRD Boundary
Forebay Line
Newport
Inglewood
Charnock Fault
Uplift
PACIFIC OCEAN
Santa Monica Bay
San Pedro Bay
Rio Hondo
San Gabriel River
San Jose Creek
Los Angeles River
Coyote Creek
Harbor Lake
Marina Del Rey
Ballona Creek
Compton Creek
Dominguez Channel
North Fork Coyote Creek
0
5 Miles
N
S
E
W
WRD

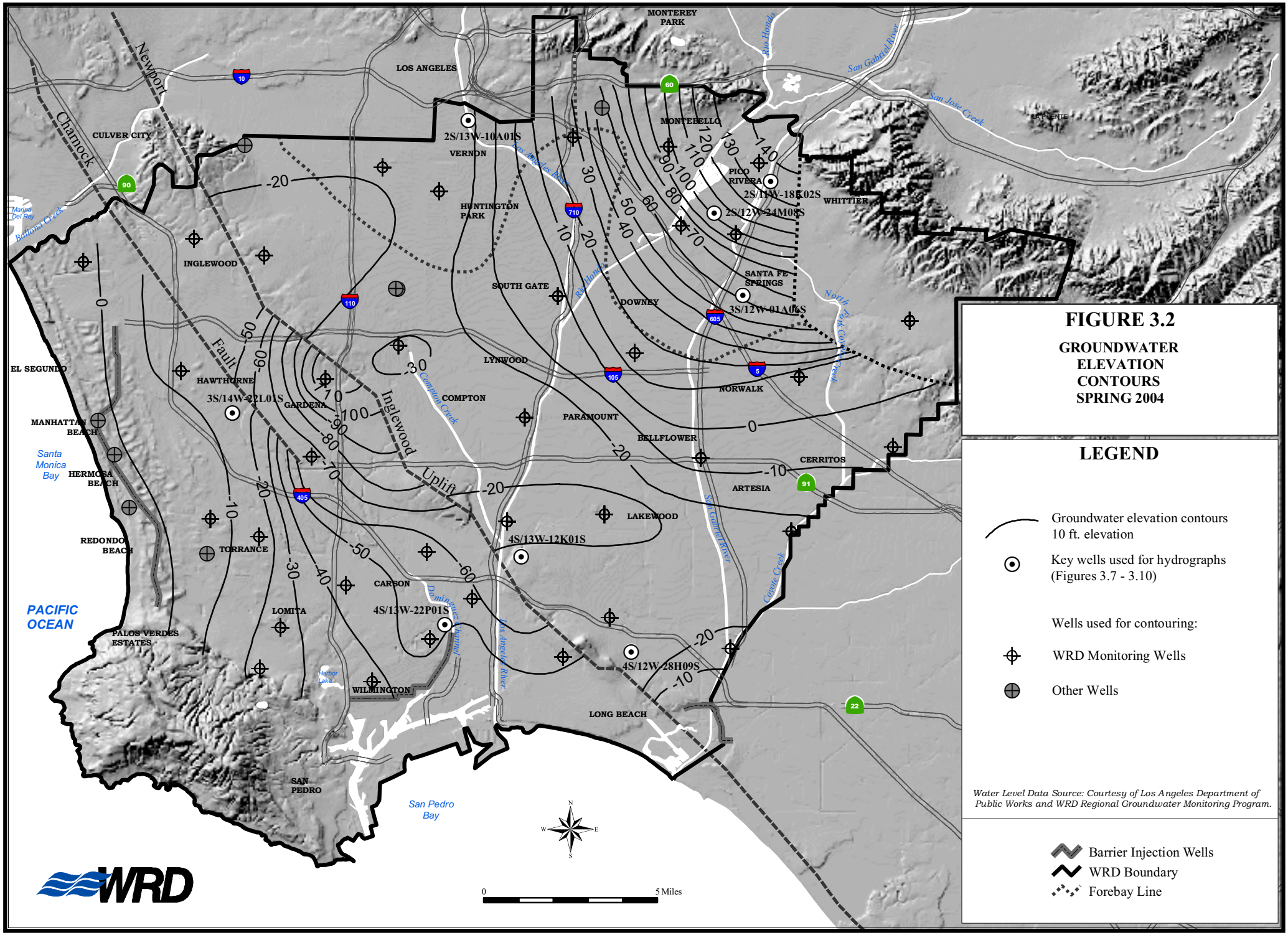


FIGURE 3.2
GROUNDWATER ELEVATION CONTOURS SPRING 2004
LEGEND
Groundwater elevation contours 10 ft. elevation
Key wells used for hydrographs (Figures 3.7 - 3.10)
Wells used for contouring:
WRD Monitoring Wells
Other Wells
Water Level Data Source: Courtesy of Los Angeles Department of Public Works and WRD Regional Groundwater Monitoring Program.
Barrier Injection Wells
WRD Boundary
Forebay Line
2S/13W-10A01S
2S/11W-18G02S
2S/12W-24M08S
3S/12W-01A06S
3S/14W-22L01S
4S/13W-12K01S
4S/13W-22P01S
4S/12W-28H09S
LOS ANGELES
MONTEREY PARK
MONTEBELLO
PICO RIVERA
WHITTIER
LA HABRA
VERNON
HUNTINGTON PARK
CULVER CITY
INGLEWOOD
SOUTH GATE
SANTA FE SPRINGS
DOWNEY
NORWALK
LYNWOOD
COMPTON
PARAMOUNT
BELLFLOWER
CERRITOS
ARTESIA
LAKEWOOD
EL SEGUNDO
HAWTHORNE
GARDENA
MANHATTAN BEACH
HERMOSA BEACH
REDONDO BEACH
TORRANCE
CARSON
LOMITA
PALOS VERDES ESTATES
WILMINGTON
LONG BEACH
SAN PEDRO
Newport
Charnock
Inglewood
Fault
Uplift
Rio Hondo
San Gabriel River
San Jose Creek
Los Angeles River
Coyote Creek
Dominguez Channel
Harbor Lake
Marina Del Rey
Ballona Creek
Santa Monica Bay
PACIFIC OCEAN
San Pedro Bay
0
5 Miles
WRD

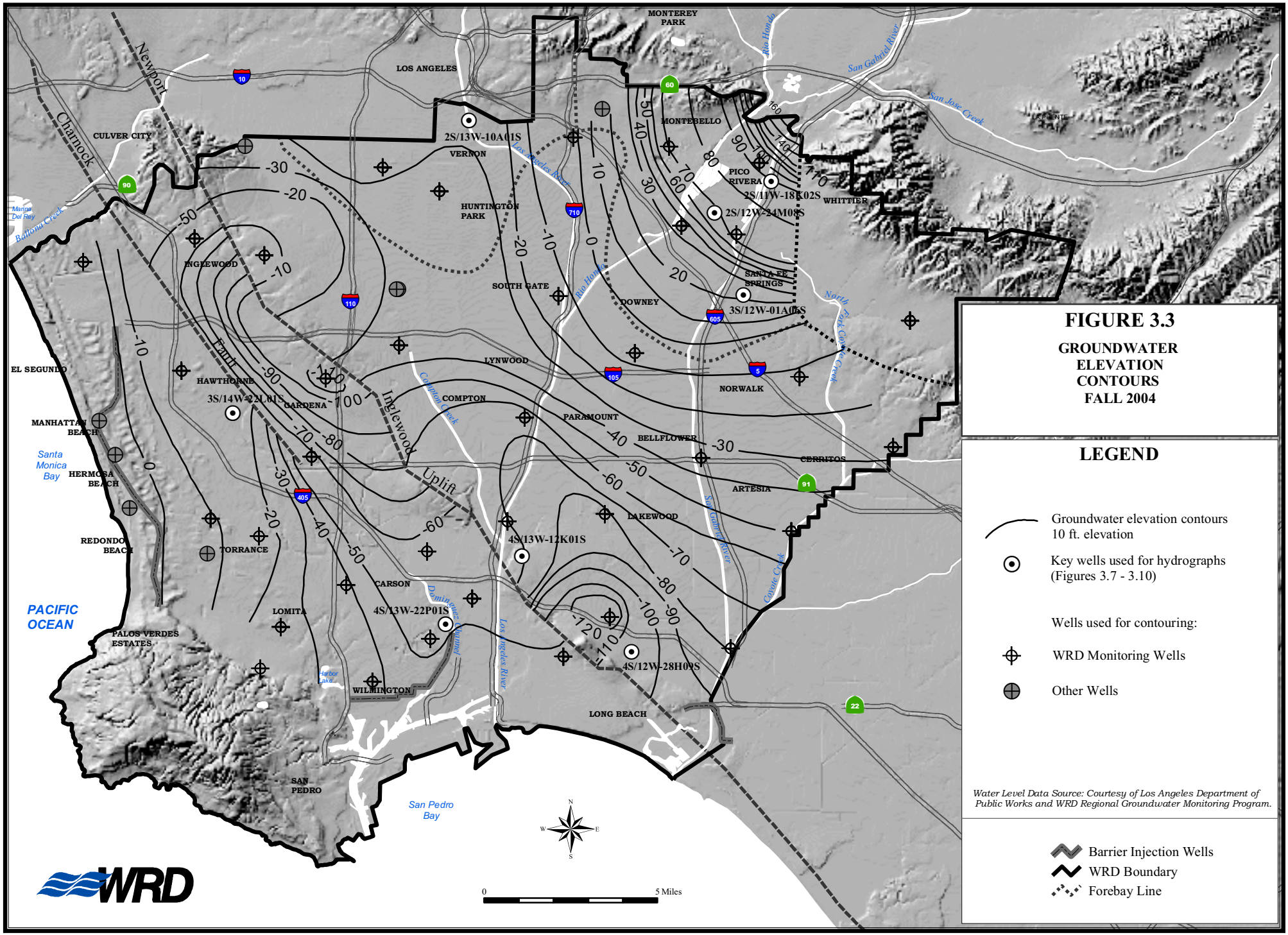


FIGURE 3.3
GROUNDWATER ELEVATION CONTOURS FALL 2004
LEGEND
Groundwater elevation contours 10 ft. elevation
Key wells used for hydrographs (Figures 3.7 - 3.10)
Wells used for contouring:
WRD Monitoring Wells
Other Wells
Water Level Data Source: Courtesy of Los Angeles Department of Public Works and WRD Regional Groundwater Monitoring Program.
Barrier Injection Wells
WRD Boundary
Forebay Line
2S/13W-10A01S
2S/11W-18K02S
2S/12W-24M08S
3S/12W-01A01S
3S/14W-22L01S
4S/13W-12K01S
4S/13W-22P01S
4S/12W-28H09S
MONTEREY PARK
LOS ANGELES
MONTEBELLO
VERNON
PICO RIVERA
WHITTIER
CULVER CITY
HUNTINGTON PARK
INGLEWOOD
SOUTH GATE
SANTA FE SPRINGS
DOWNEY
LYNWOOD
NORWALK
EL SEGUNDO
HAWTHORNE
GARDENA
COMPTON
PARAMOUNT
BELLFLOWER
CERRITOS
ARTESIA
MANHATTAN BEACH
HERMOSA BEACH
REDONDO BEACH
TORRANCE
LAKEWOOD
CARSON
LOMITA
PALOS VERDES ESTATES
WILMINGTON
LONG BEACH
SAN PEDRO
PACIFIC OCEAN
Santa Monica Bay
San Pedro Bay
Newport
Charnock
Inglewood
Uplift
Fault
Los Angeles River
Rio Hondo
San Gabriel River
San Jose Creek
North Fork Coyote Creek
Compton Creek
Dominguez Channel
Harbor Lake
Marina Del Rey
Ballona Creek
Coyote Creek
0
5 Miles
N
S
E
W
WRD

Monthly Groundwater Production
Water Year 2003-2004

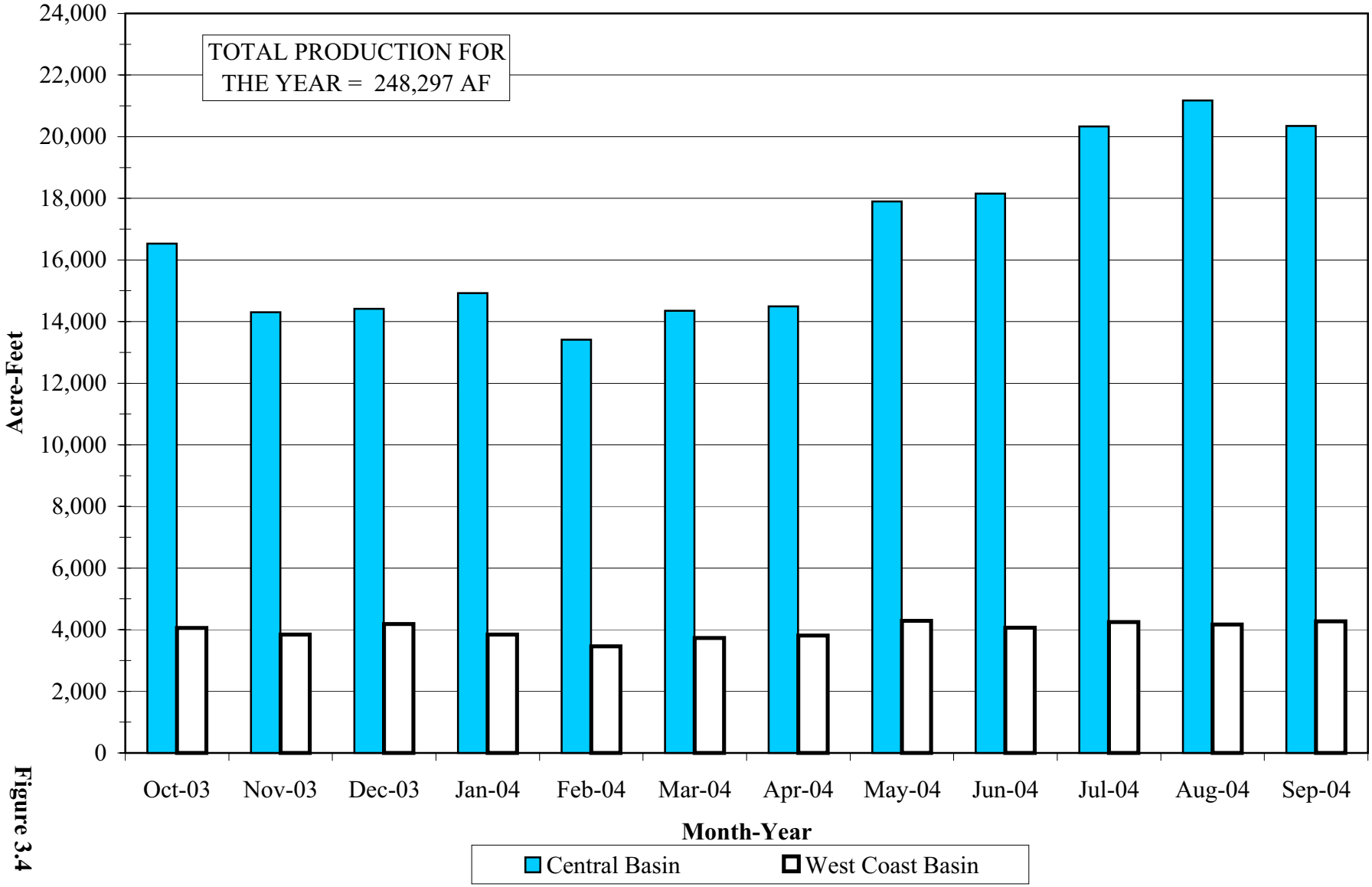


Figure 3.4

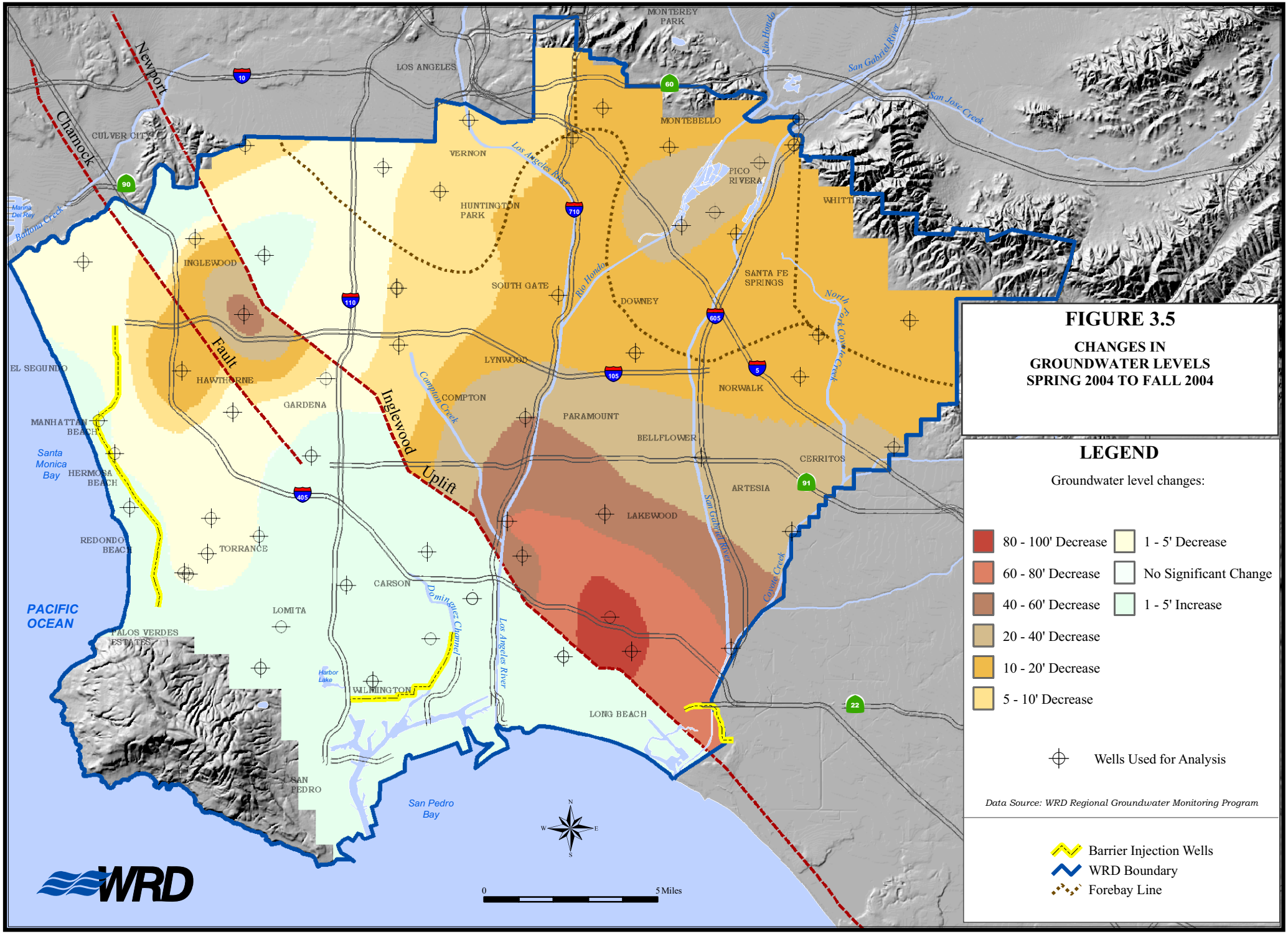


FIGURE 3.5
CHANGES IN
GROUNDWATER LEVELS
SPRING 2004 TO FALL 2004
LEGEND
Groundwater level changes:
80 - 100' Decrease
60 - 80' Decrease
40 - 60' Decrease
20 - 40' Decrease
10 - 20' Decrease
5 - 10' Decrease
1 - 5' Decrease
No Significant Change
1 - 5' Increase
Wells Used for Analysis
Data Source: WRD Regional Groundwater Monitoring Program
Barrier Injection Wells
WRD Boundary
Forebay Line
Newport
Chamock
Fault
Inglewood
Uplift
PACIFIC
OCEAN
Santa
Monica
Bay
San Pedro
Bay
LOS ANGELES
MONTEREY
PARK
MONTEBELLO
VERNON
HUNTINGTON
PARK
PICO
RIVERA
WHITTIER
CULVER CITY
INGLEWOOD
SOUTH GATE
DOWNEY
SANTA FE
SPRINGS
LYNWOOD
COMPTON
PARAMOUNT
NORWALK
BELLFLOWER
CERRITOS
ARTESIA
LAKEWOOD
GARDENA
HAWTHORNE
EL SEGUNDO
MANHATTAN
BEACH
HERMOSA
BEACH
REDONDO
BEACH
TORRANCE
CARSON
LOMITA
PALOS VERDES
ESTATES
WILMINGTON
LONG BEACH
SAN
PEDRO
Harbor
Lake
Marina
Del Rey
Ballona Creek
Los Angeles River
Rio Hondo
San Gabriel River
San Jose Creek
North Fork Coyote Creek
Compton Creek
Dominguez Channel
Coyote Creek
0
5 Miles
N
S
E
W
WRD

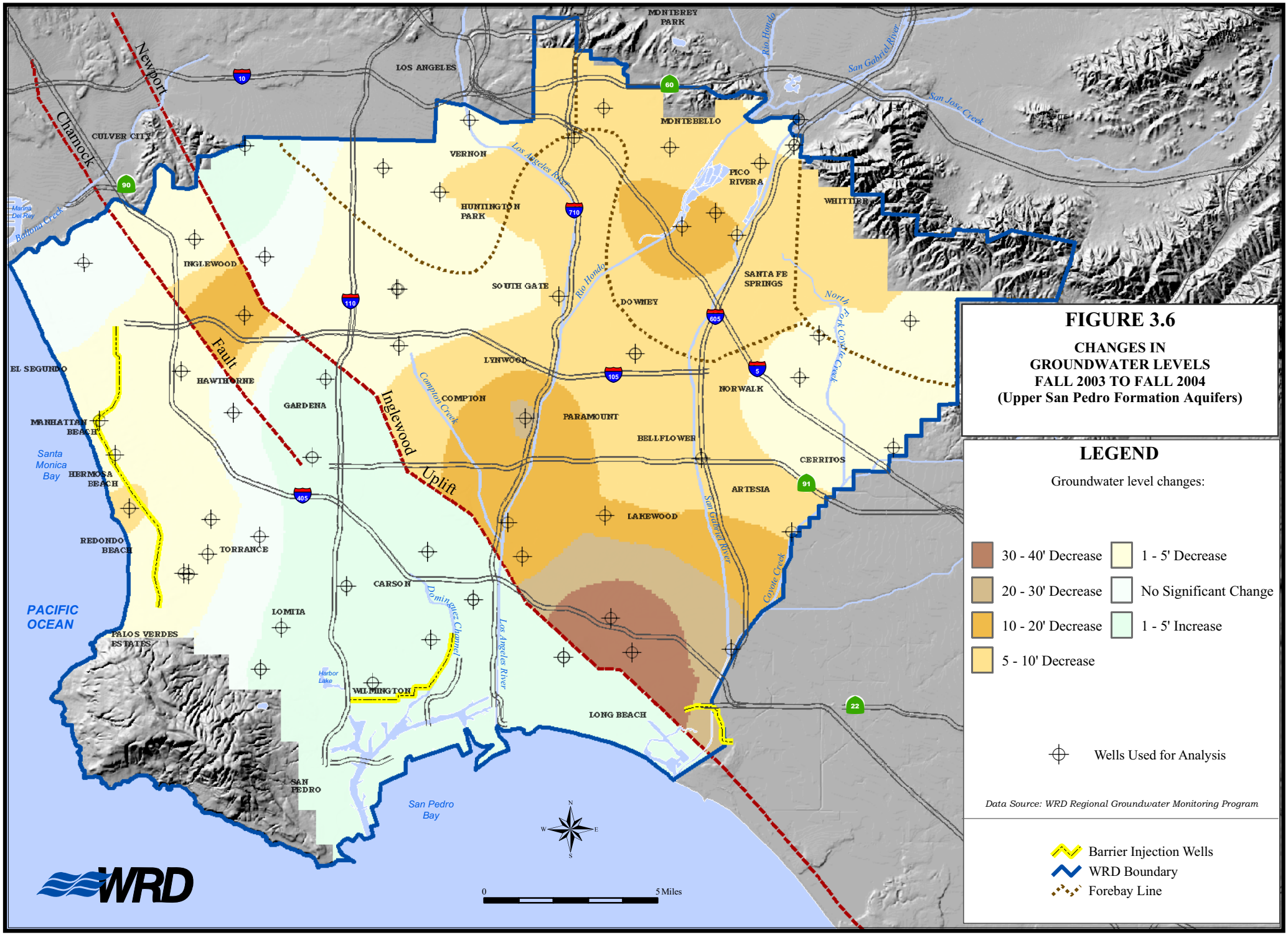
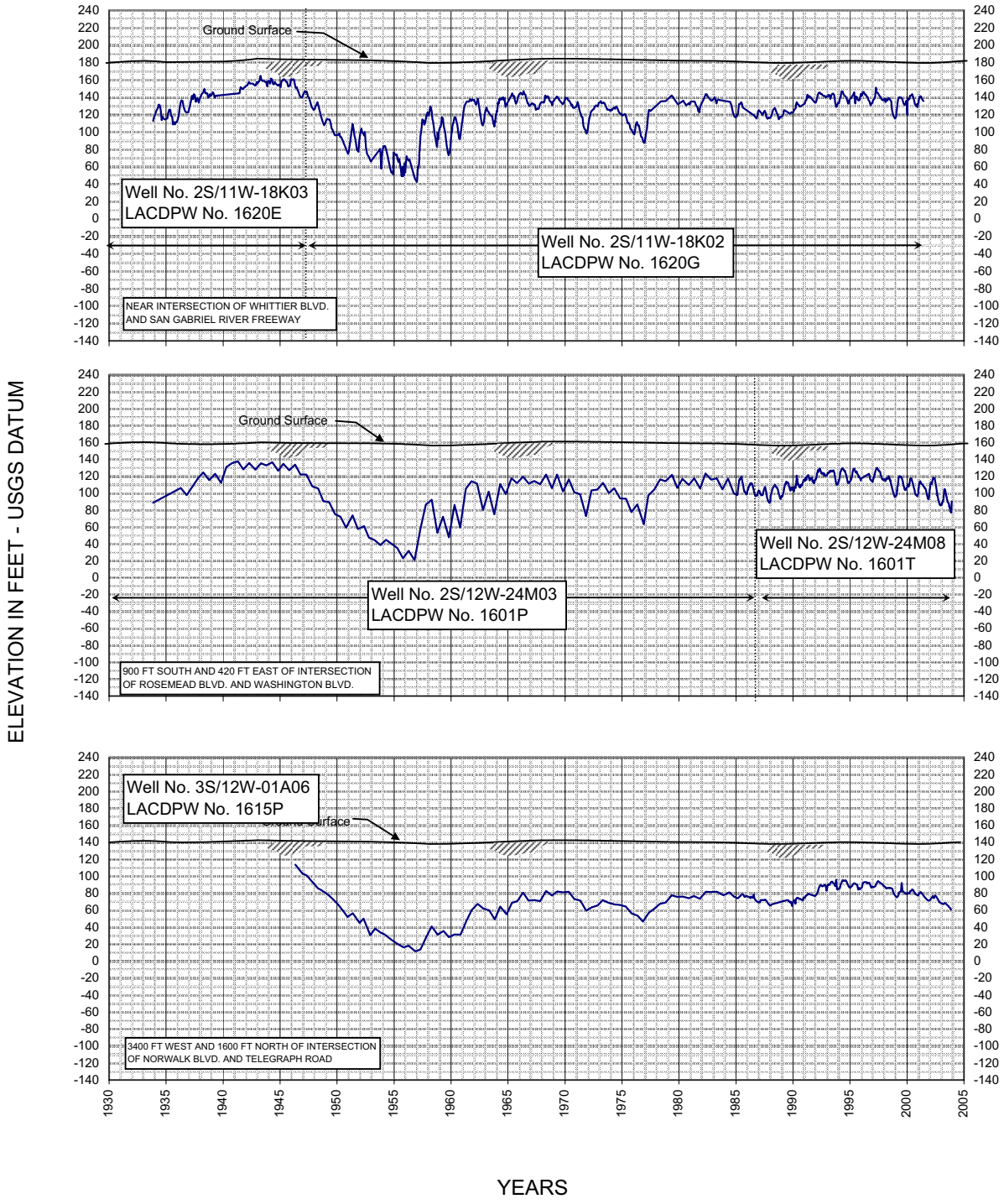
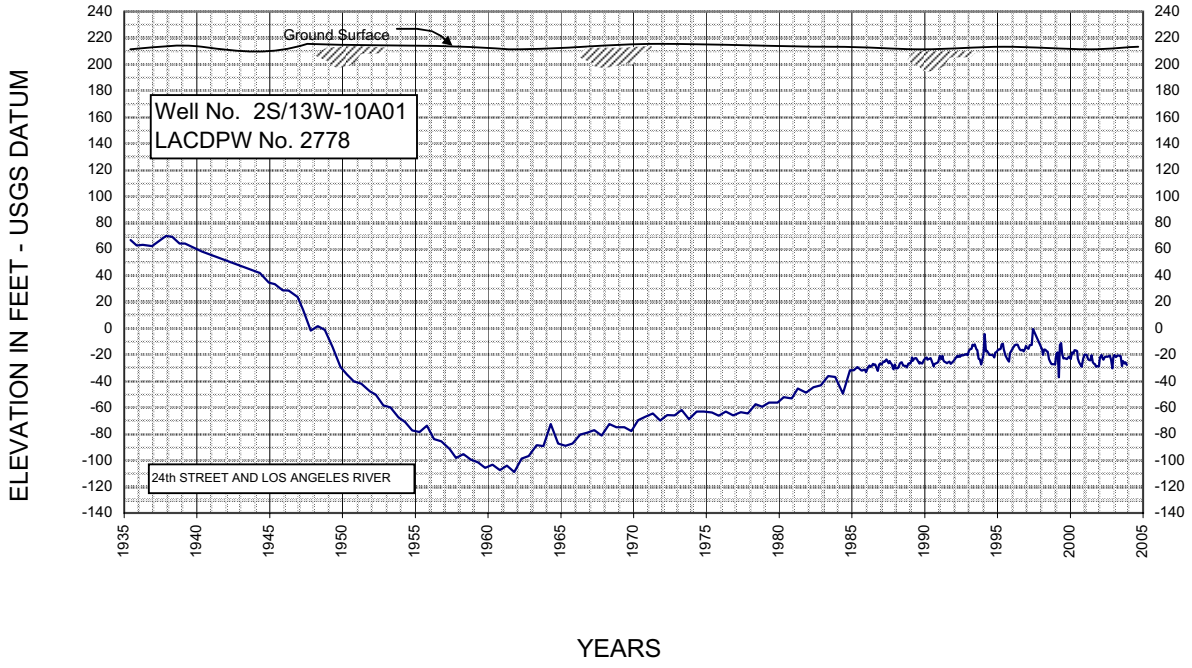


FIGURE 3.6
CHANGES IN
GROUNDWATER LEVELS
FALL 2003 TO FALL 2004
(Upper San Pedro Formation Aquifers)
LEGEND
Groundwater level changes:
30 - 40' Decrease
20 - 30' Decrease
10 - 20' Decrease
5 - 10' Decrease
1 - 5' Decrease
No Significant Change
1 - 5' Increase
Wells Used for Analysis
Data Source: WRD Regional Groundwater Monitoring Program
Barrier Injection Wells
WRD Boundary
Forebay Line
0
5 Miles
WRD
PACIFIC OCEAN
Santa Monica Bay
San Pedro Bay
Newport
Inglewood Fault
Uplift
Charnock
LOS ANGELES
MONTEREY PARK
MONTEBELLO
CULVER CITY
VERNON
HUNTINGTON PARK
PICO RIVERA
WHITTIER
INGLEWOOD
SOUTH GATE
DOWNEY
SANTA FE SPRINGS
LYNWOOD
COMPTON
PARAMOUNT
NORWALK
EL SEGUNDO
HAWTHORNE
GARDENA
BELLFLOWER
CERRITOS
MANHATTAN BEACH
HERMOSA BEACH
ARTESIA
LAKEWOOD
REDONDO BEACH
TORRANCE
CARSON
LOMITA
PALOS VERDES ESTATES
WILMINGTON
LONG BEACH
SAN PEDRO
Los Angeles River
Rio Hondo
San Gabriel River
San Jose Creek
North Fork Coyote Creek
Coyote Creek
Compton Creek
Dominguez Channel
Harbor Lake
Marina Del Rey
Ballona Creek
10
60
90
710
110
105
605
5
91
405
22



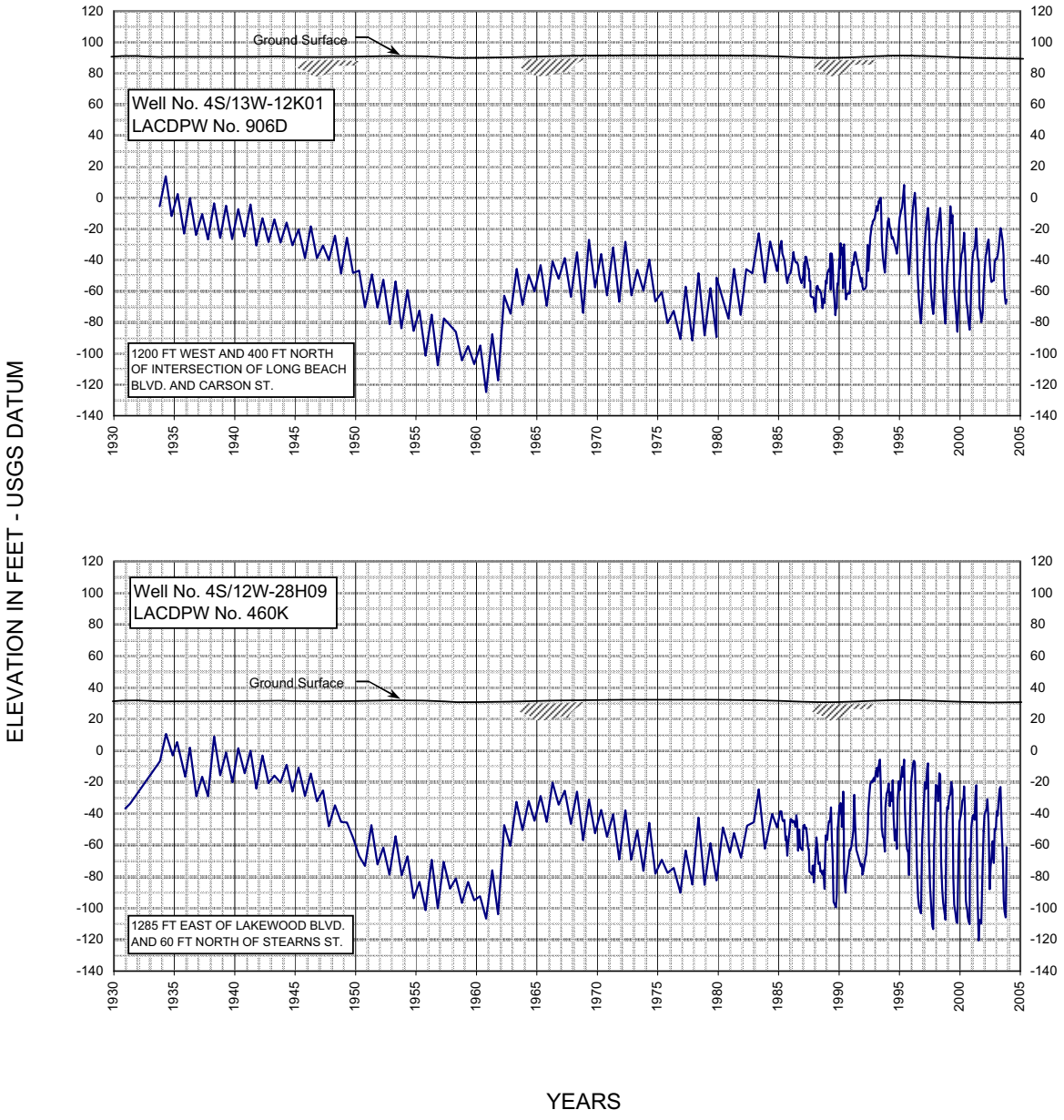
FLUCTUATIONS OF WATER LEVEL AT WELLS
MONTEBELLO FOREBAY

Figure 3.7



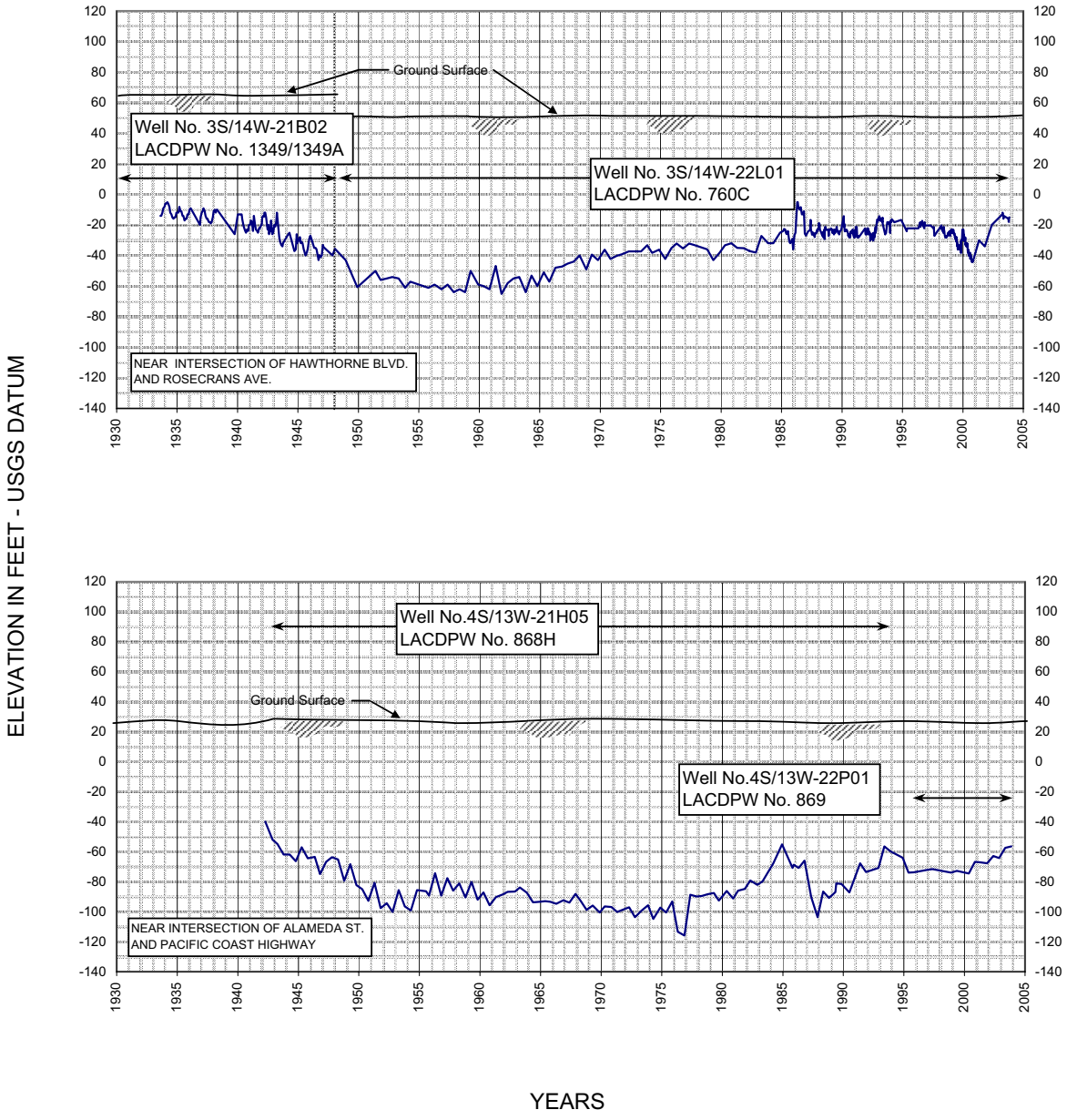
FLUCTUATIONS OF WATER LEVEL AT WELLS
LOS ANGELES FOREBAY

Figure 3.8



FLUCTUATIONS OF WATER LEVEL AT WELLS
CENTRAL BASIN PRESSURE AREA

Figure 3.9



FLUCTUATIONS OF WATER LEVEL AT WELLS

WEST BASIN

Figure 3.10

FLUCTUATIONS OF WATER LEVELS IN WRD NESTED MONITORING WELL RIO HONDO #1

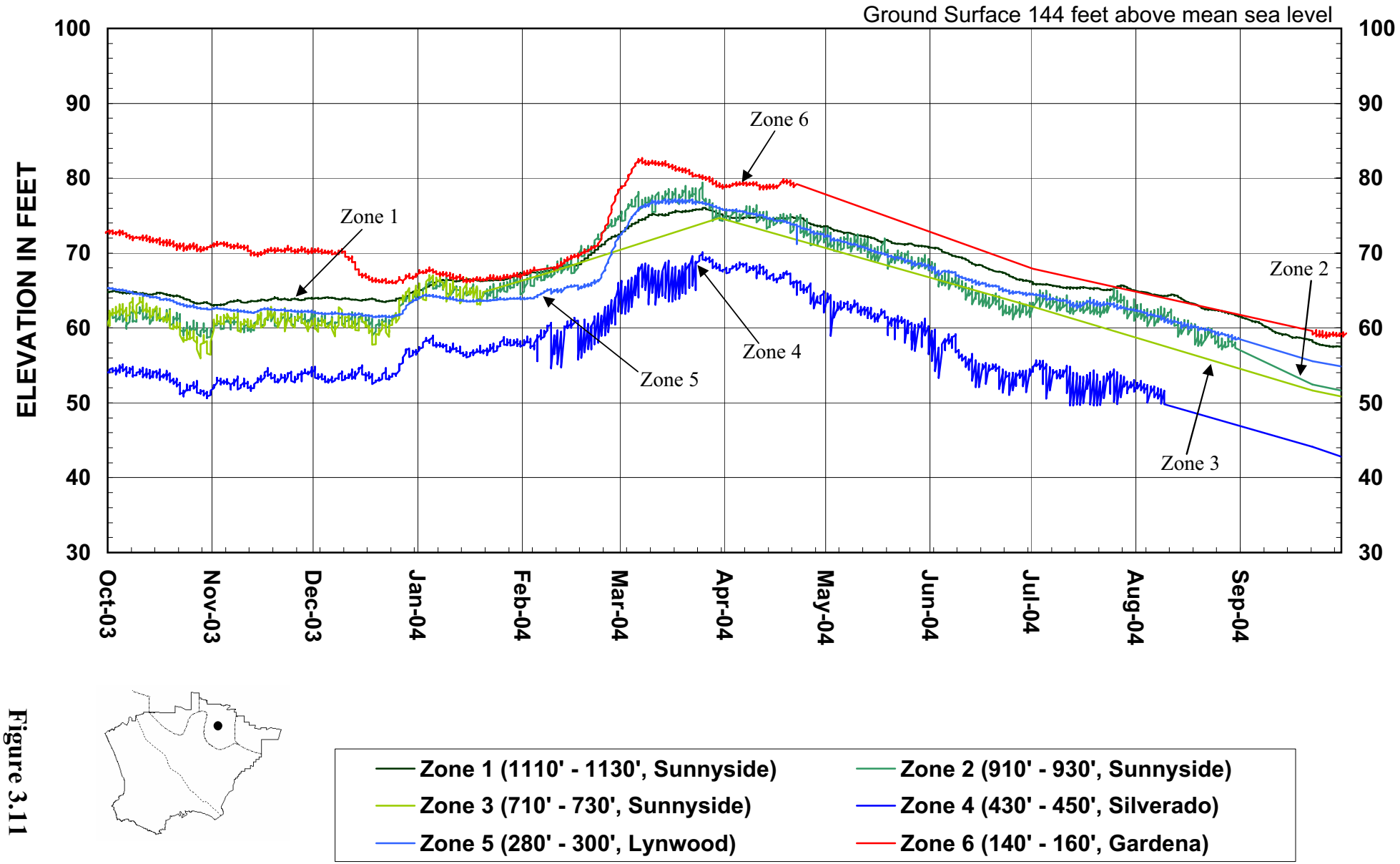


Figure 3.11

FLUCTUATIONS OF WATER LEVELS IN WRD NESTED MONITORING WELL HUNTINGTON PARK #1

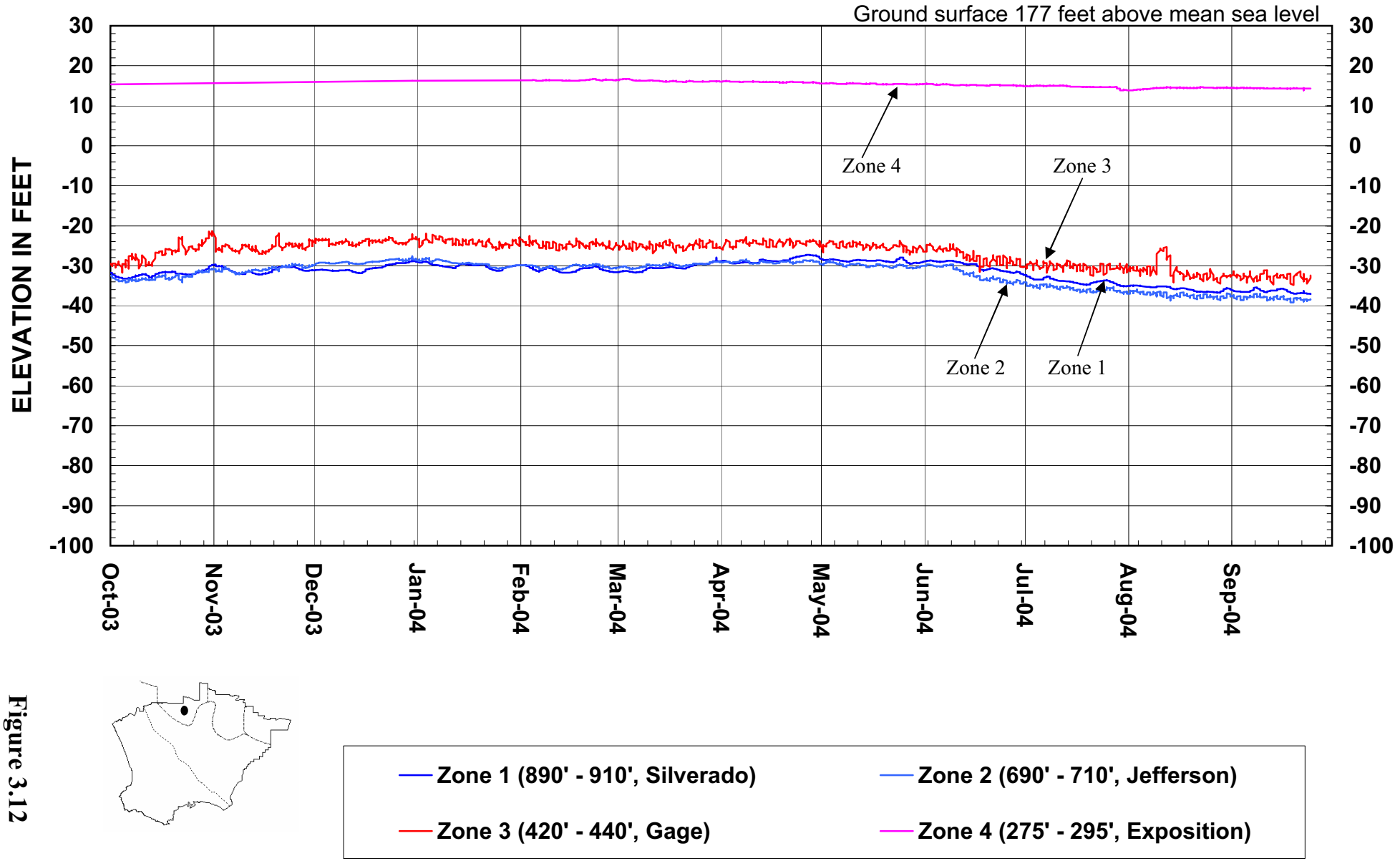


Figure 3.12

FLUCTUATIONS OF WATER LEVELS IN WRD NESTED MONITORING WELL LONG BEACH #1

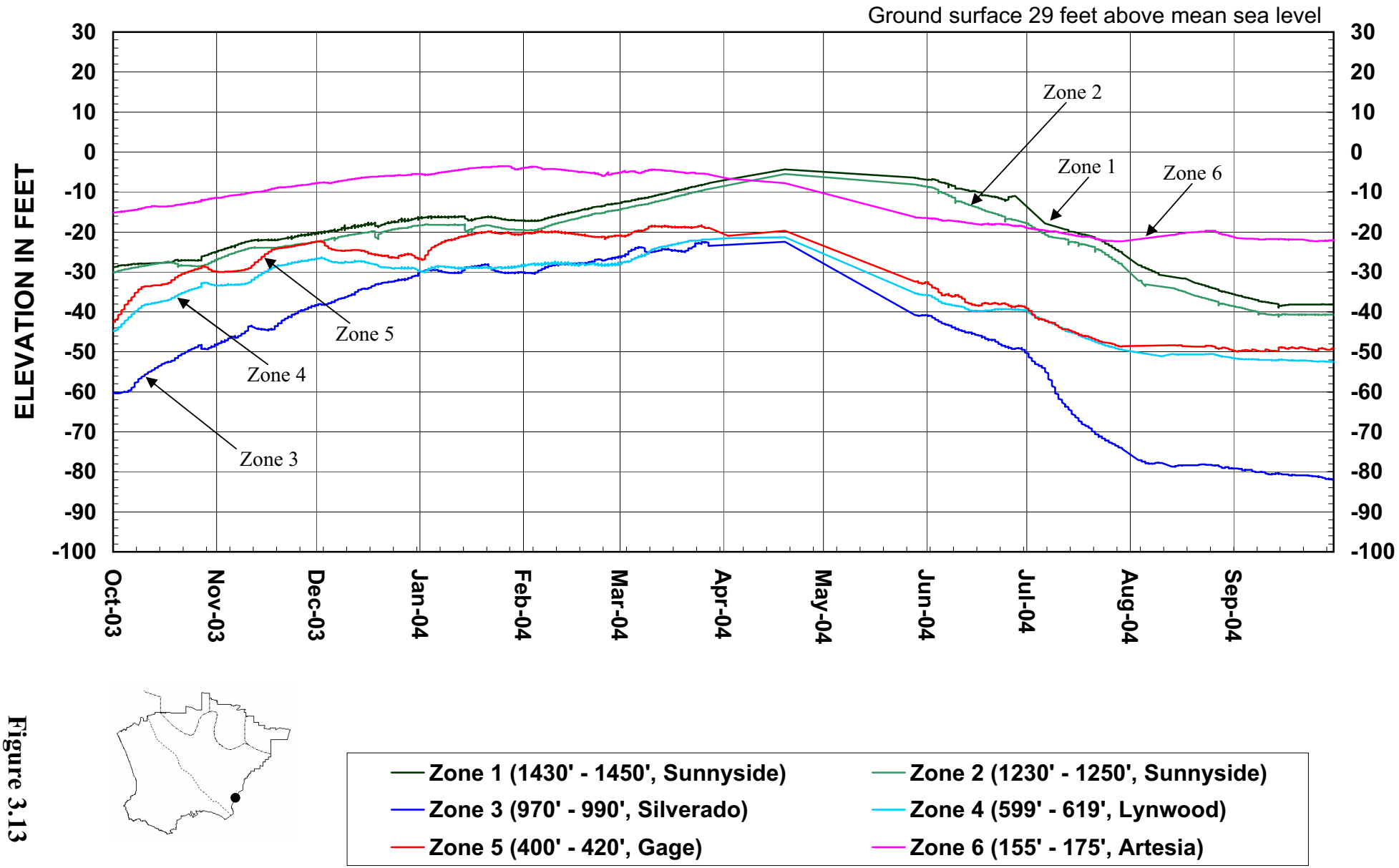


Figure 3.13

FLUCTUATIONS OF WATER LEVELS IN WRD NESTED MONITORING WELL CARSON #1

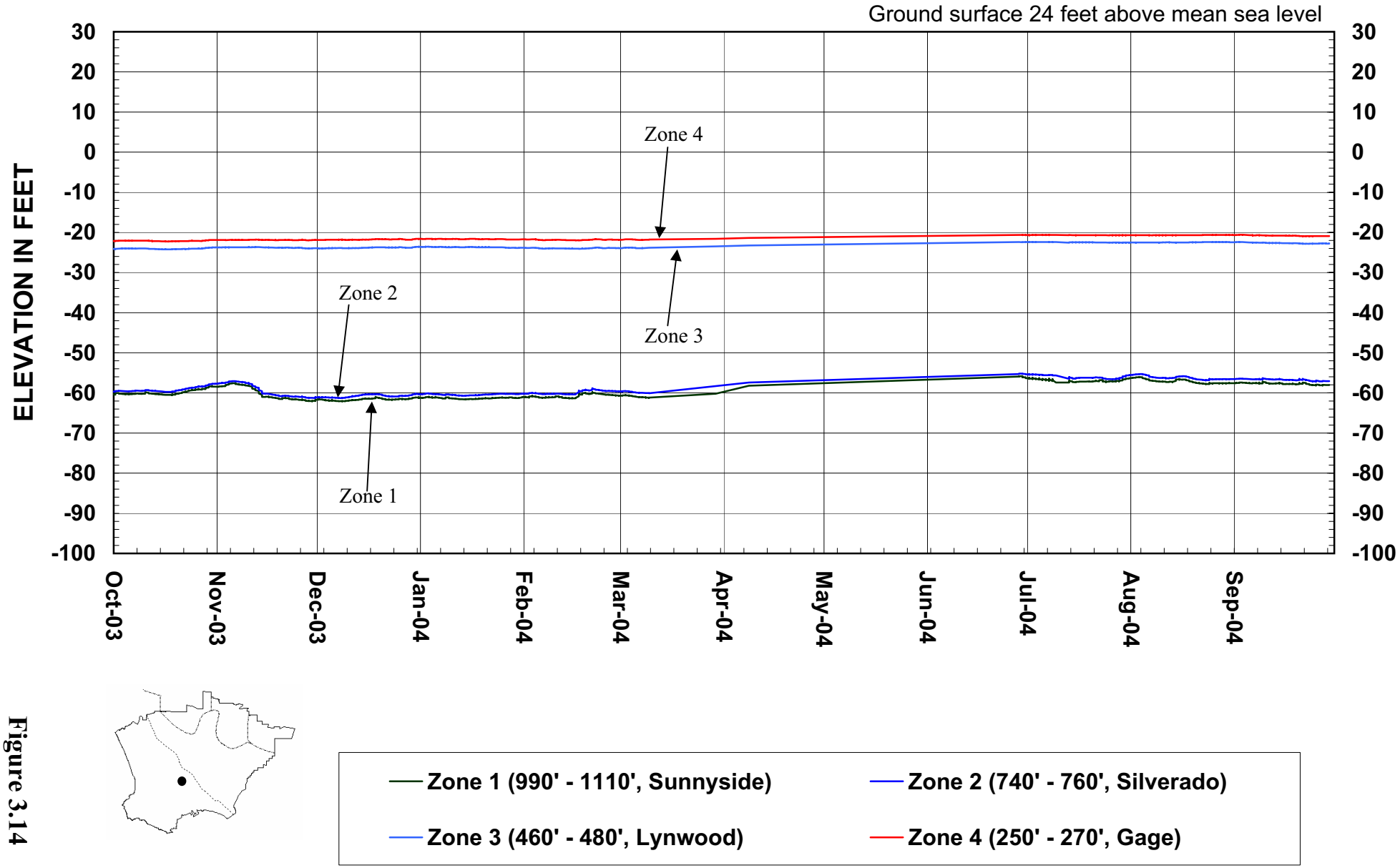
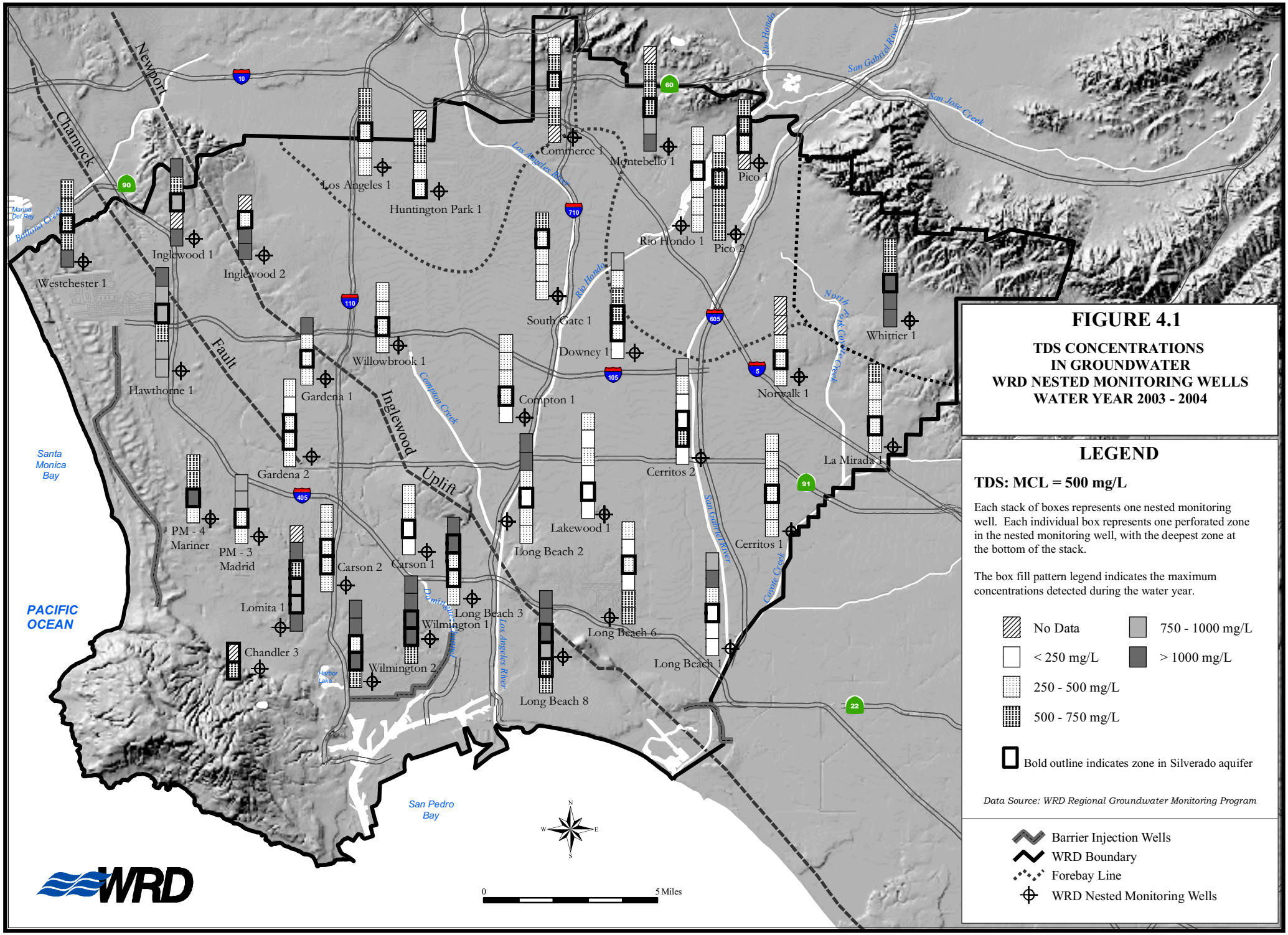


Figure 3.14


Newport
Charnock
Fault
Inglewood
Uplift
Los Angeles 1
Huntington Park 1
Commerce 1
Montebello 1
Pico 1
Pico 2
Rio Hondo 1
Inglewood 1
Inglewood 2
Westechester 1
Willowbrook 1
Hawthorne 1
Gardena 1
Gardena 2
South Gate 1
Downey 1
Compton 1
Norwalk 1
Whittier 1
La Mirada 1
Cerritos 2
Cerritos 1
Lakewood 1
Long Beach 2
Long Beach 6
Long Beach 1
Long Beach 8
Long Beach 3
Wilmington 1
Wilmington 2
Carson 1
Carson 2
Lomita 1
Chandler 3
PM - 4
Mariner
PM - 3
Madrid
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
Compton Creek
Coyote Creek
Dominguez Channel
Harbor Lake
Ballona Creek
Marina Del Rey
Santa Monica Bay
San Pedro Bay
PACIFIC OCEAN
0
5 Miles
FIGURE 4.1
TDS CONCENTRATIONS
IN GROUNDWATER
WRD NESTED MONITORING WELLS
WATER YEAR 2003 - 2004
LEGEND
TDS: MCL = 500 mg/L
Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.
The box fill pattern legend indicates the maximum concentrations detected during the water year.
No Data
< 250 mg/L
250 - 500 mg/L
500 - 750 mg/L
750 - 1000 mg/L
> 1000 mg/L
Bold outline indicates zone in Silverado aquifer
Data Source: WRD Regional Groundwater Monitoring Program
Barrier Injection Wells
WRD Boundary
Forebay Line
WRD Nested Monitoring Wells
WRD

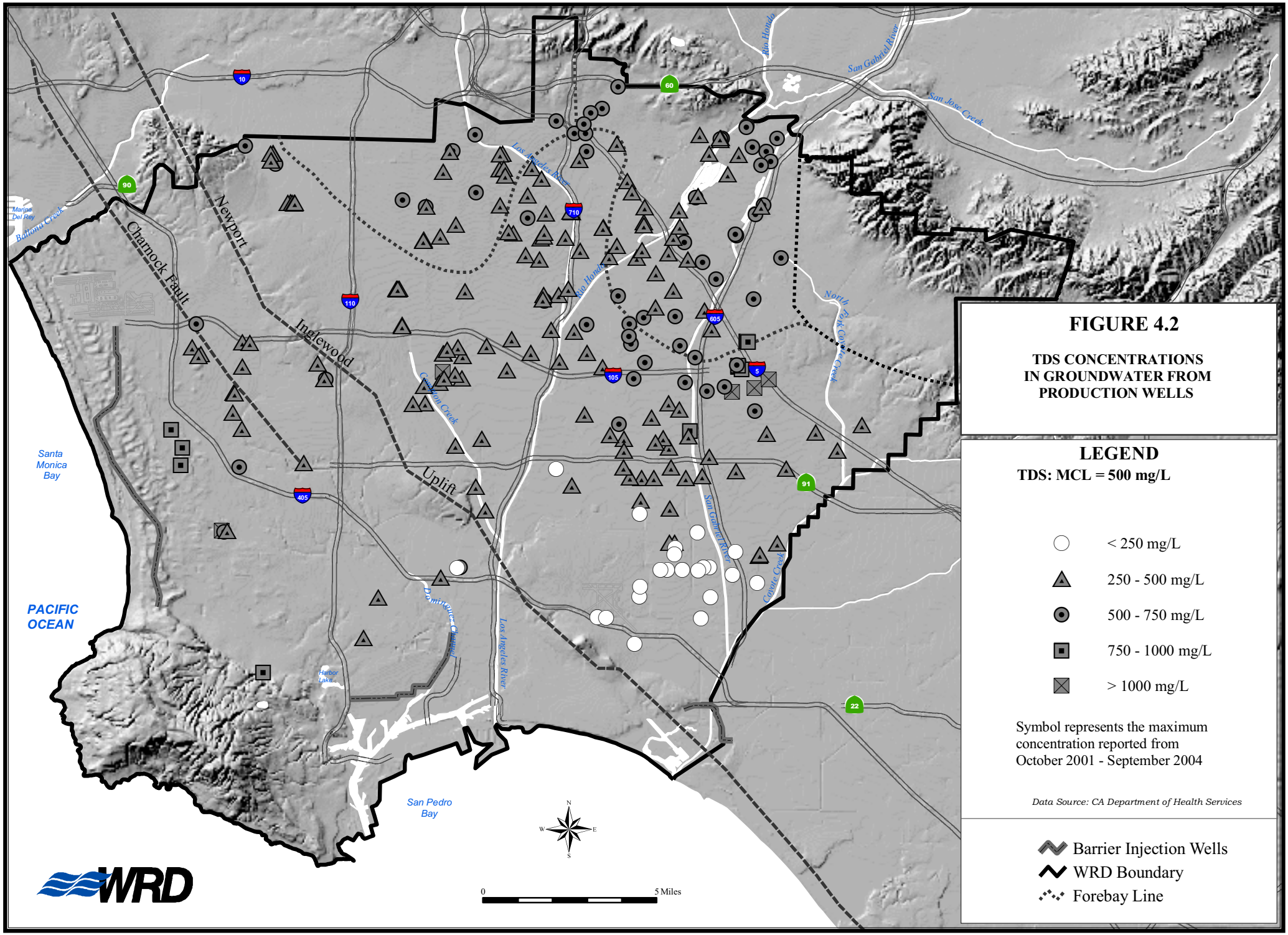


FIGURE 4.2
TDS CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
TDS: MCL = 500 mg/L
< 250 mg/L
250 - 500 mg/L
500 - 750 mg/L
750 - 1000 mg/L
> 1000 mg/L
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
PACIFIC OCEAN
Santa Monica Bay
San Pedro Bay
Newport
Charnock Fault
Inglewood
Uplift
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
North Fork Coyote Creek
Coyote Creek
Centinela Creek
Dominguez Channel
Ballona Creek
Harbor Lake
Marina Del Rey
0
5 Miles
WRD

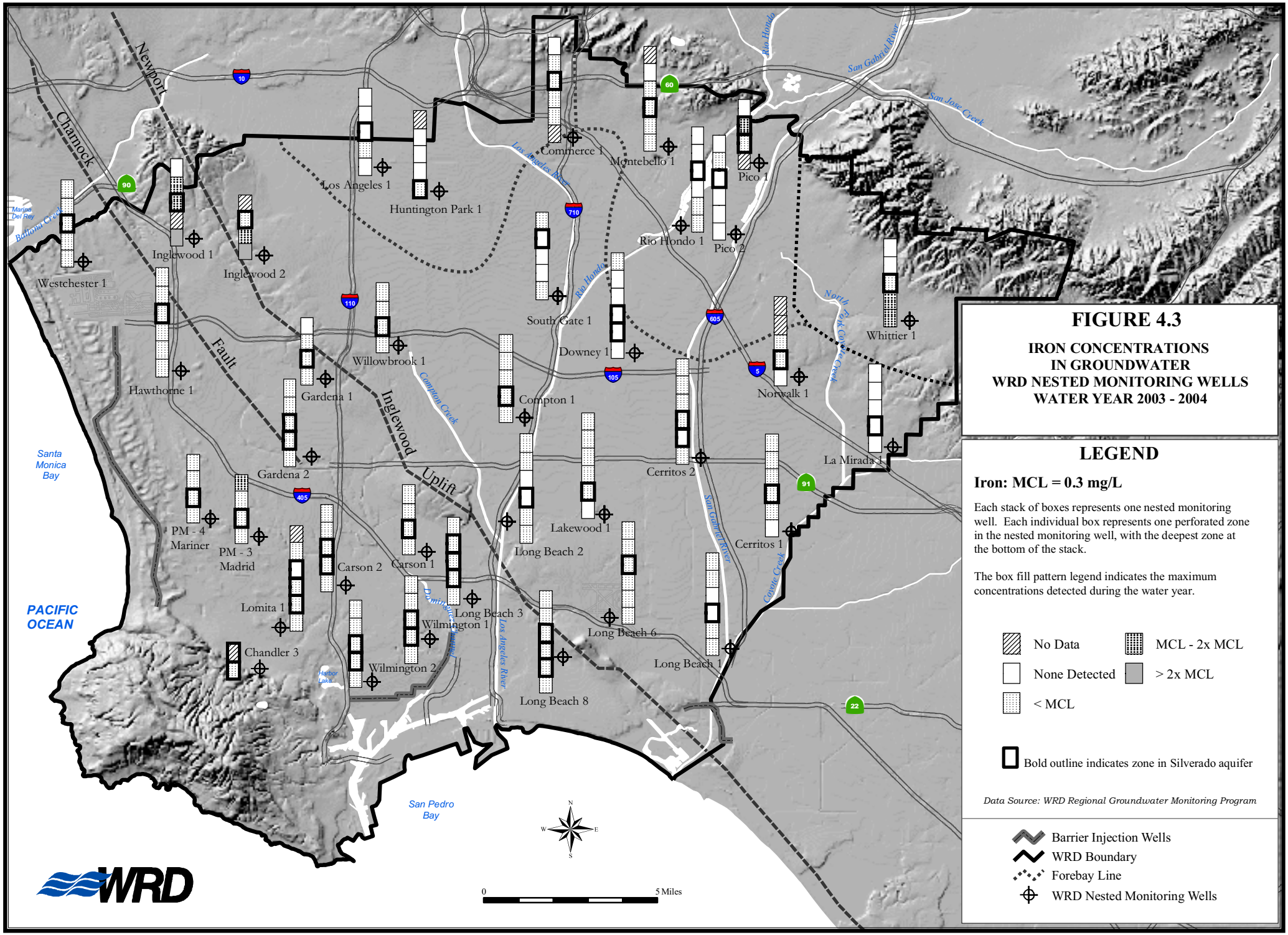


FIGURE 4.3

IRON CONCENTRATIONS IN GROUNDWATER WRD NESTED MONITORING WELLS WATER YEAR 2003 - 2004

LEGEND

Iron: MCL = 0.3 mg/L

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- None Detected
- < MCL
- MCL - 2x MCL
- > 2x MCL

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

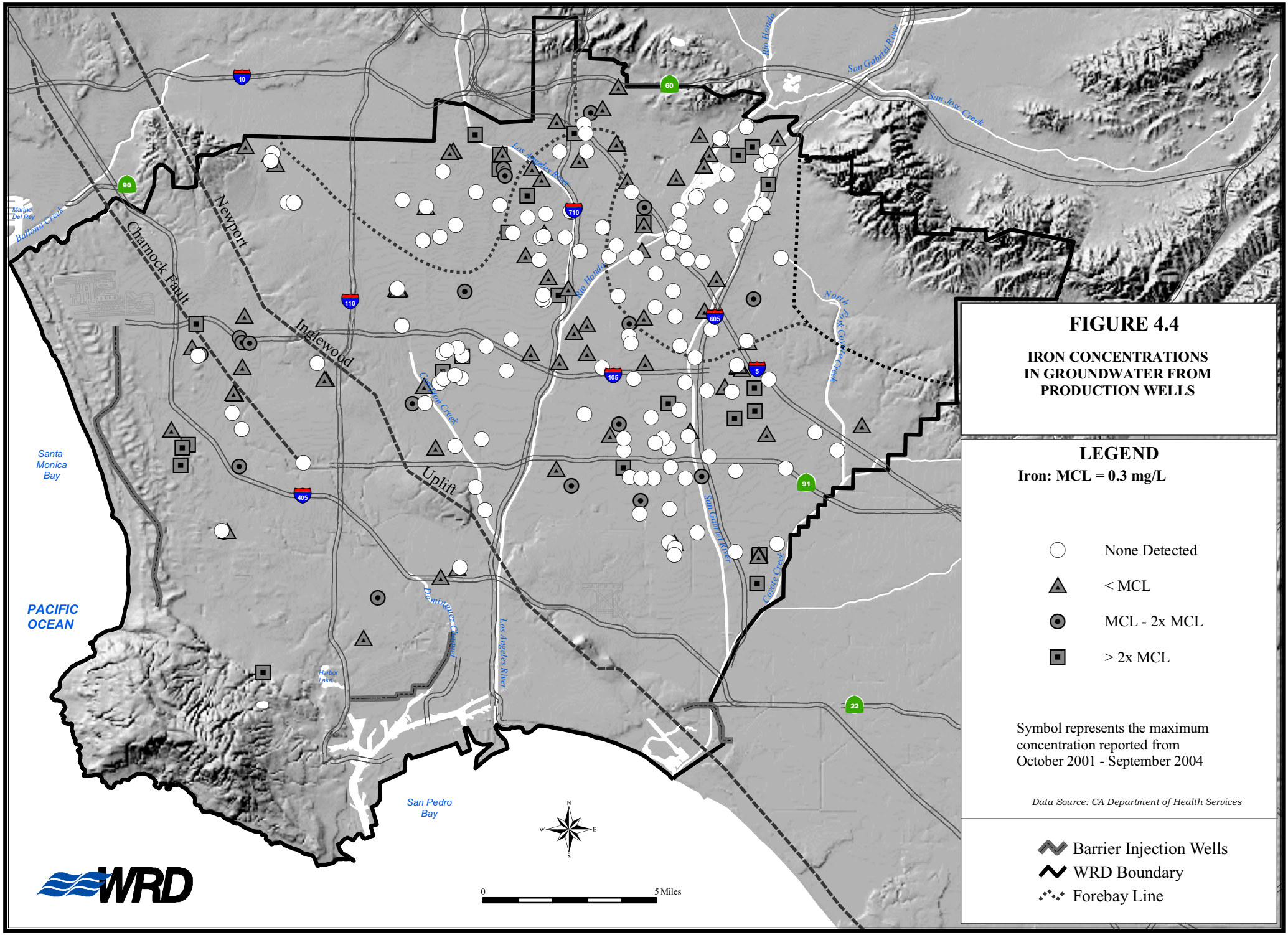


FIGURE 4.4
IRON CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
Iron: MCL = 0.3 mg/L
None Detected
< MCL
MCL - 2x MCL
> 2x MCL
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
PACIFIC OCEAN
Santa Monica Bay
San Pedro Bay
Newport
Charnock Fault
Inglewood
Uplift
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
Coyote Creek
Dominguez Channel
Harbor Lake
Marina Del Rey
Ballona Creek
0
5 Miles
WRD

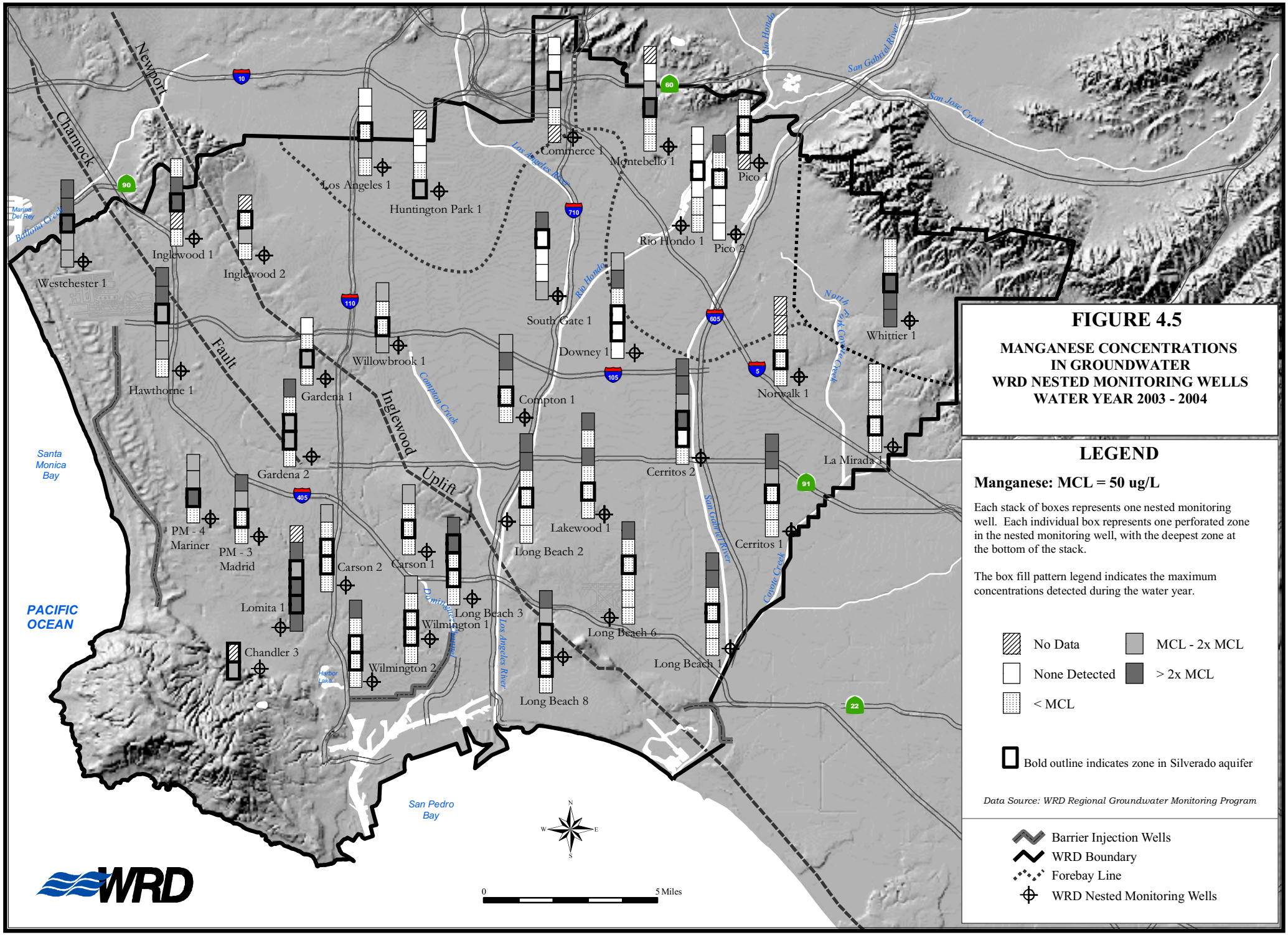


FIGURE 4.5

MANGANESE CONCENTRATIONS IN GROUNDWATER WRD NESTED MONITORING WELLS WATER YEAR 2003 - 2004

LEGEND

Manganese: MCL = 50 ug/L

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- None Detected
- < MCL
- MCL - 2x MCL
- > 2x MCL

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

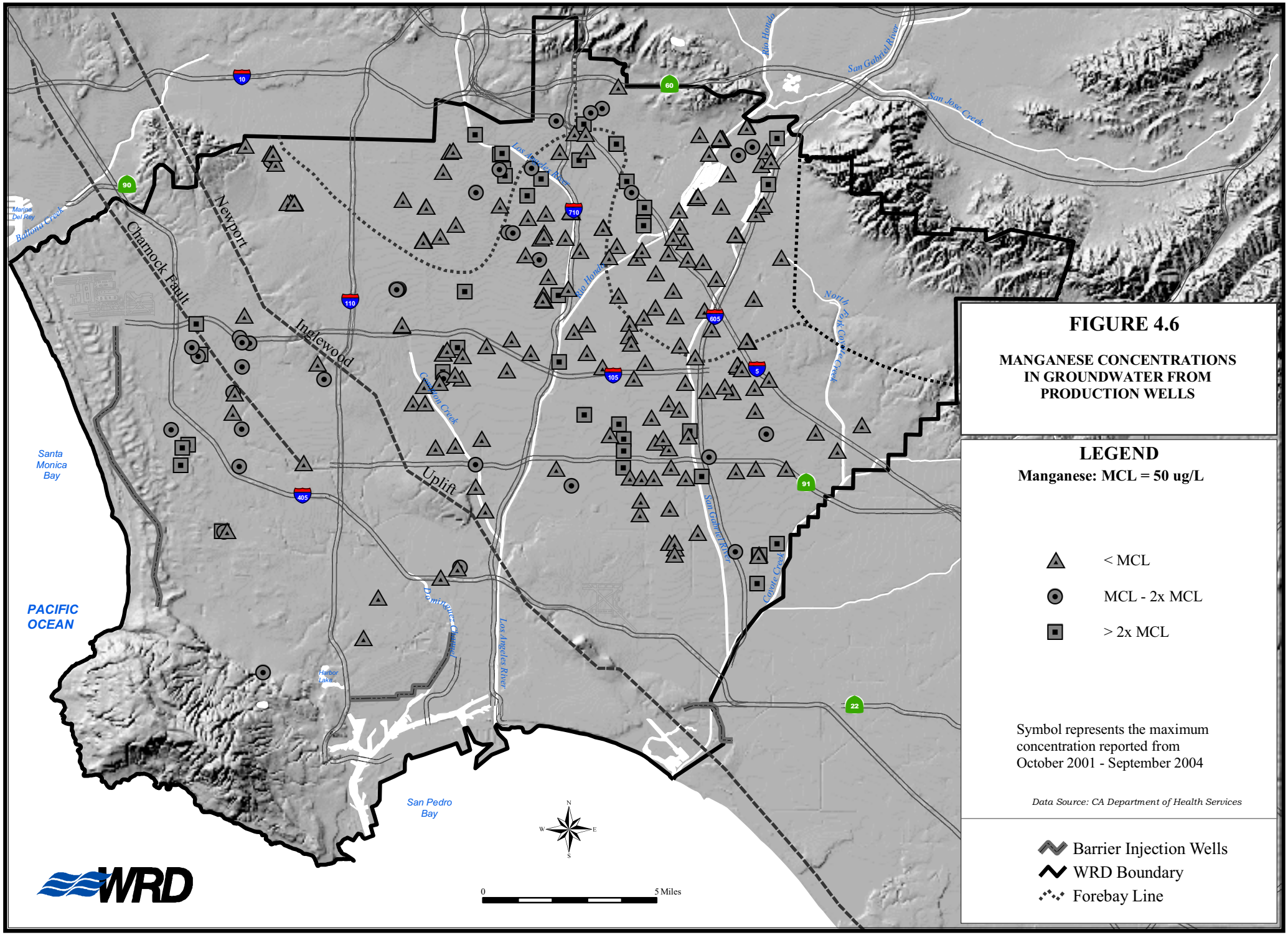


FIGURE 4.6
MANGANESE CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
Manganese: MCL = 50 ug/L
< MCL
MCL - 2x MCL
> 2x MCL
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
PACIFIC OCEAN
Santa Monica Bay
San Pedro Bay
Newport
Charnock Fault
Inglewood
Uplift
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
Coyote Creek
Dominguez Channel
Harbor Lake
Marina Del Rey
Ballona Creek
Centinela Creek
North Fork Coyote Creek
0
5 Miles
N
S
E
W
WRD

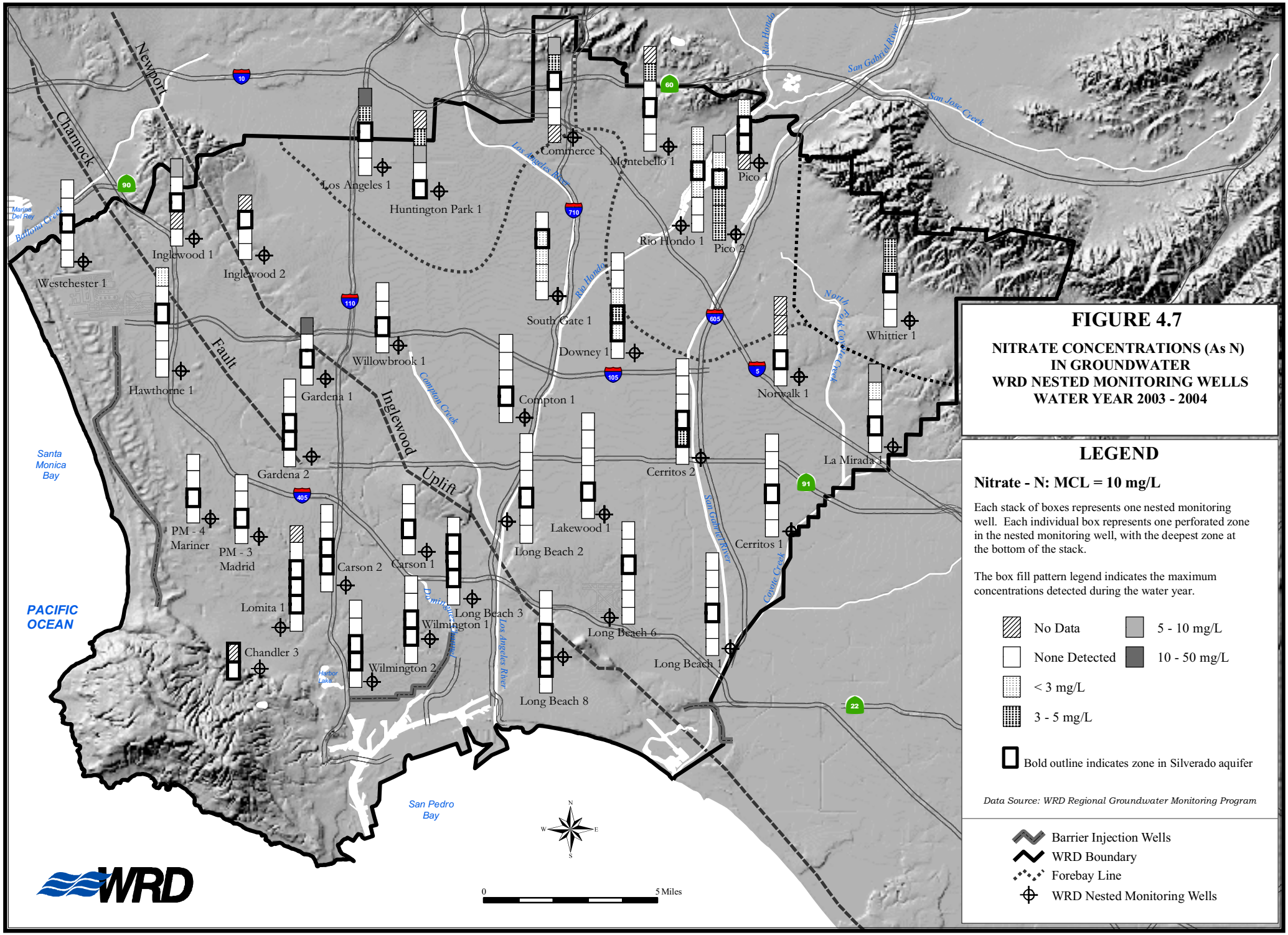


FIGURE 4.7

**NITRATE CONCENTRATIONS (As N)
IN GROUNDWATER
WRD NESTED MONITORING WELLS
WATER YEAR 2003 - 2004**

LEGEND

Nitrate - N: MCL = 10 mg/L

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- None Detected
- < 3 mg/L
- 3 - 5 mg/L
- 5 - 10 mg/L
- 10 - 50 mg/L

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

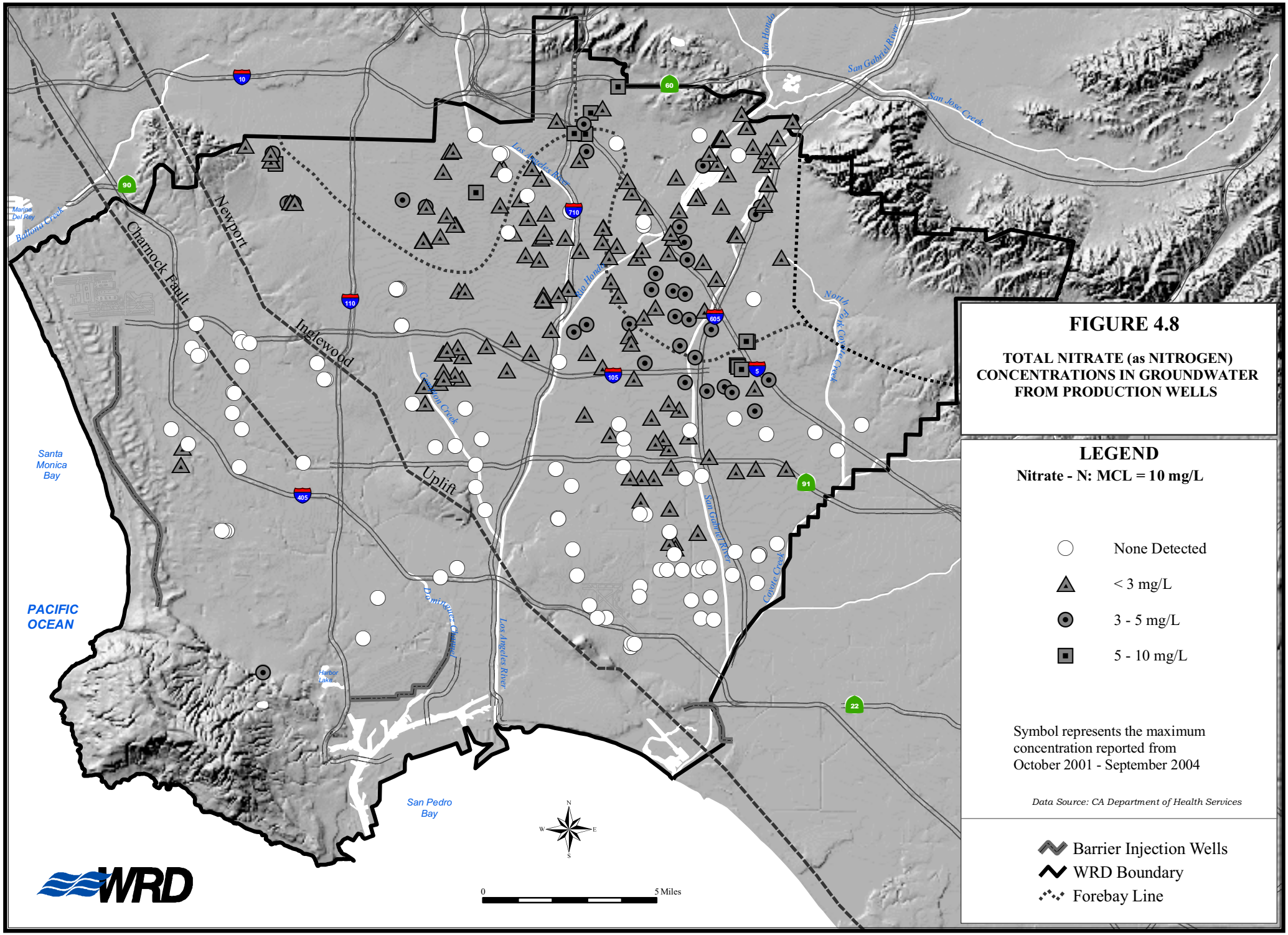
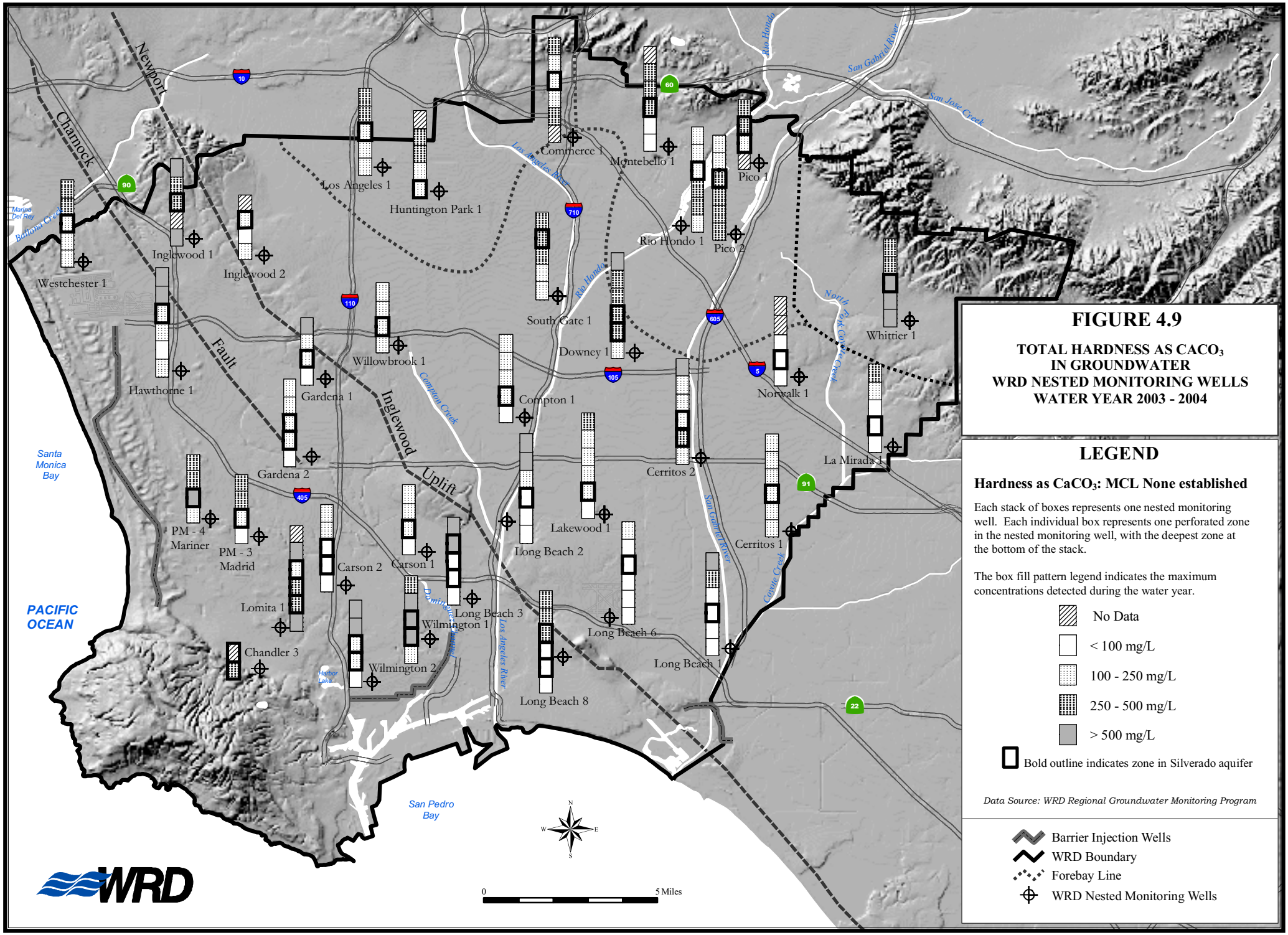


FIGURE 4.8
TOTAL NITRATE (as NITROGEN) CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
Nitrate - N: MCL = 10 mg/L
None Detected
< 3 mg/L
3 - 5 mg/L
5 - 10 mg/L
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Charnock Fault
Newport
Inglewood
Uplift
Los Angeles River
Rio Hondo
San Gabriel River
San Jose Creek
North Fork Coyote Creek
Coyote Creek
Centinela Creek
Dominguez Channel
Harbor Lake
Marina Del Rey
Ballona Creek
Santa Monica Bay
PACIFIC OCEAN
San Pedro Bay
10
60
90
710
110
605
105
5
91
405
22
N
S
E
W
0
5 Miles
WRD


Newport
Charnock
Fault
Inglewood
Uplift
Los Angeles 1
Huntington Park 1
Commerce 1
Montebello 1
Pico 1
Pico 2
Rio Hondo 1
Inglewood 1
Inglewood 2
Westechester 1
Willowbrook 1
Hawthorne 1
Gardena 1
Gardena 2
South Gate 1
Downey 1
Compton 1
Norwalk 1
Whittier 1
La Mirada 1
Cerritos 2
Cerritos 1
Lakewood 1
Long Beach 2
Long Beach 6
Long Beach 1
Long Beach 3
Long Beach 8
Wilmington 1
Wilmington 2
Carson 1
Carson 2
Lomita 1
Chandler 3
PM - 4
Mariner
PM - 3
Madrid
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
Compton Creek
Coyote Creek
Dominguez Channel
Harbor Lake
Ballona Creek
Marina Del Rey
Santa Monica Bay
PACIFIC OCEAN
San Pedro Bay
0
5 Miles
FIGURE 4.9
TOTAL HARDNESS AS $CACO_3$
IN GROUNDWATER
WRD NESTED MONITORING WELLS
WATER YEAR 2003 - 2004
LEGEND
Hardness as $CaCO_3$: MCL None established
Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.
The box fill pattern legend indicates the maximum concentrations detected during the water year.
No Data
< 100 mg/L
100 - 250 mg/L
250 - 500 mg/L
> 500 mg/L
Bold outline indicates zone in Silverado aquifer
Data Source: WRD Regional Groundwater Monitoring Program
Barrier Injection Wells
WRD Boundary
Forebay Line
WRD Nested Monitoring Wells
WRD

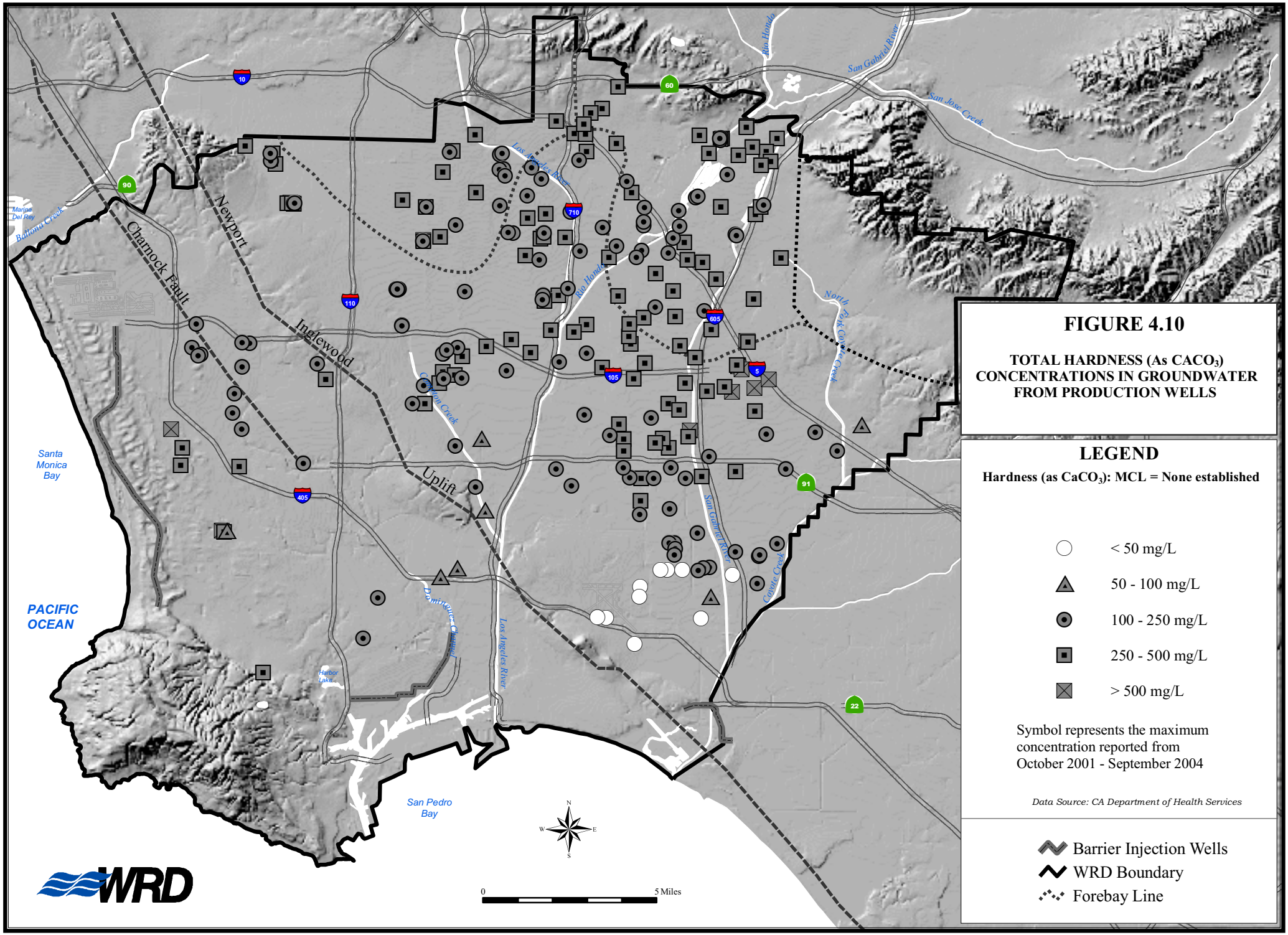


FIGURE 4.10
TOTAL HARDNESS (As $CACO_3$) CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
Hardness (as $CaCO_3$): MCL = None established
< 50 mg/L
50 - 100 mg/L
100 - 250 mg/L
250 - 500 mg/L
> 500 mg/L
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Charnock Fault
Newport
Inglewood
Uplift
PACIFIC OCEAN
Santa Monica Bay
San Pedro Bay
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
North Fork Coyote Creek
Coyote Creek
Dominguez Channel
Harbor Lake
Ballona Creek
Marina Del Rey
0
5 Miles
WRD

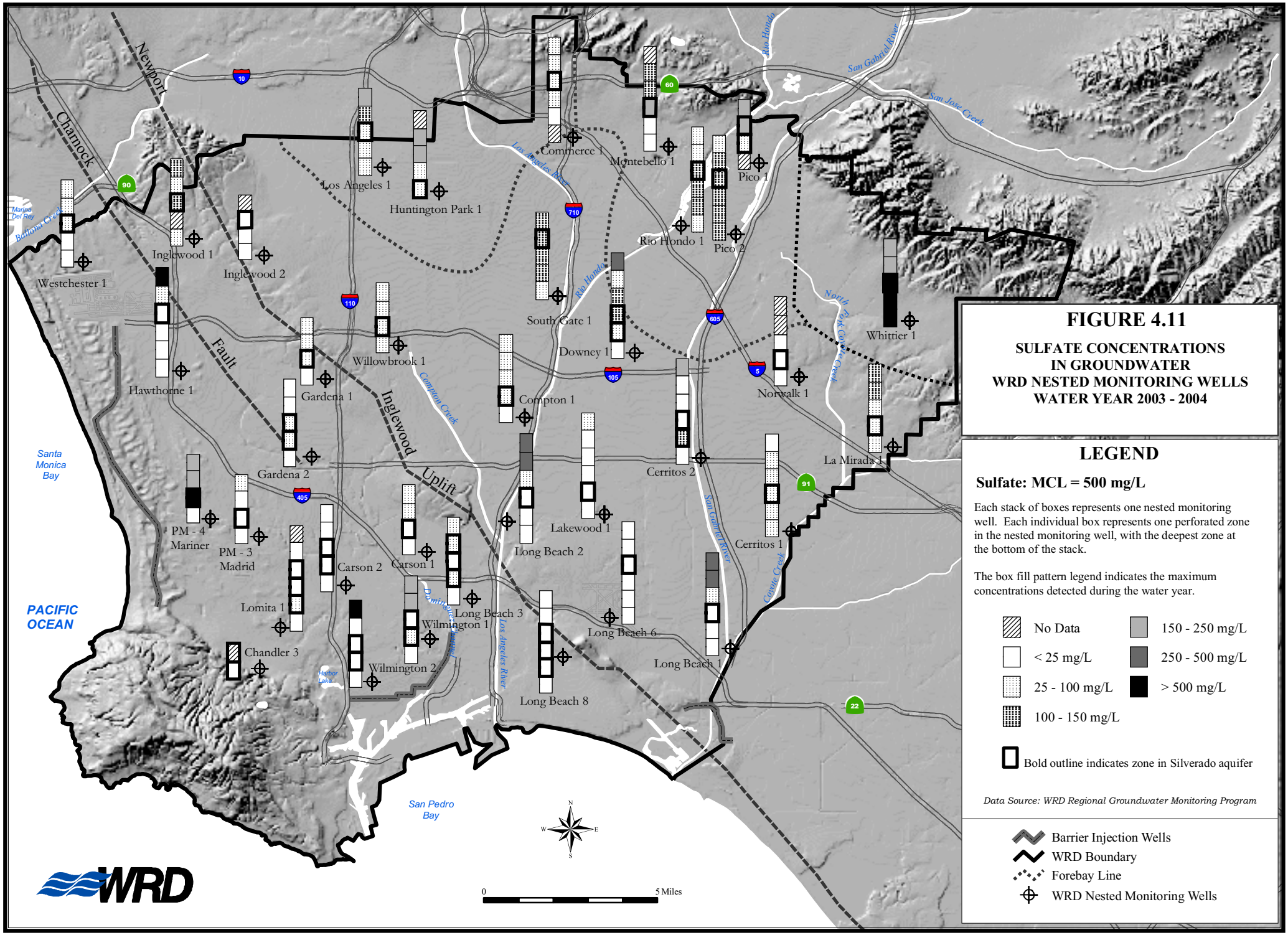


FIGURE 4.11

SULFATE CONCENTRATIONS IN GROUNDWATER WRD NESTED MONITORING WELLS WATER YEAR 2003 - 2004

LEGEND

Sulfate: MCL = 500 mg/L

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- < 25 mg/L
- 25 - 100 mg/L
- 100 - 150 mg/L
- 150 - 250 mg/L
- 250 - 500 mg/L
- > 500 mg/L

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

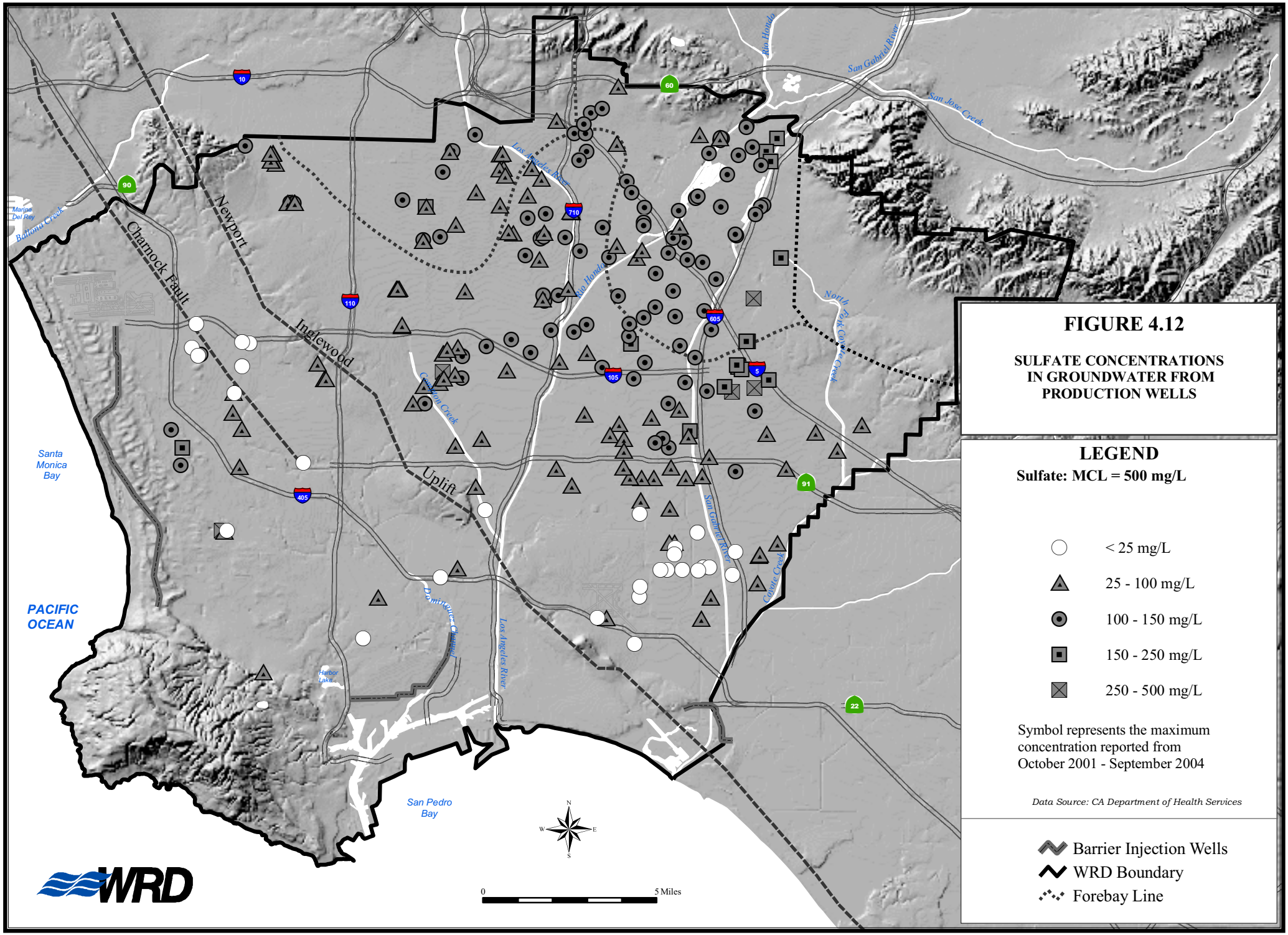
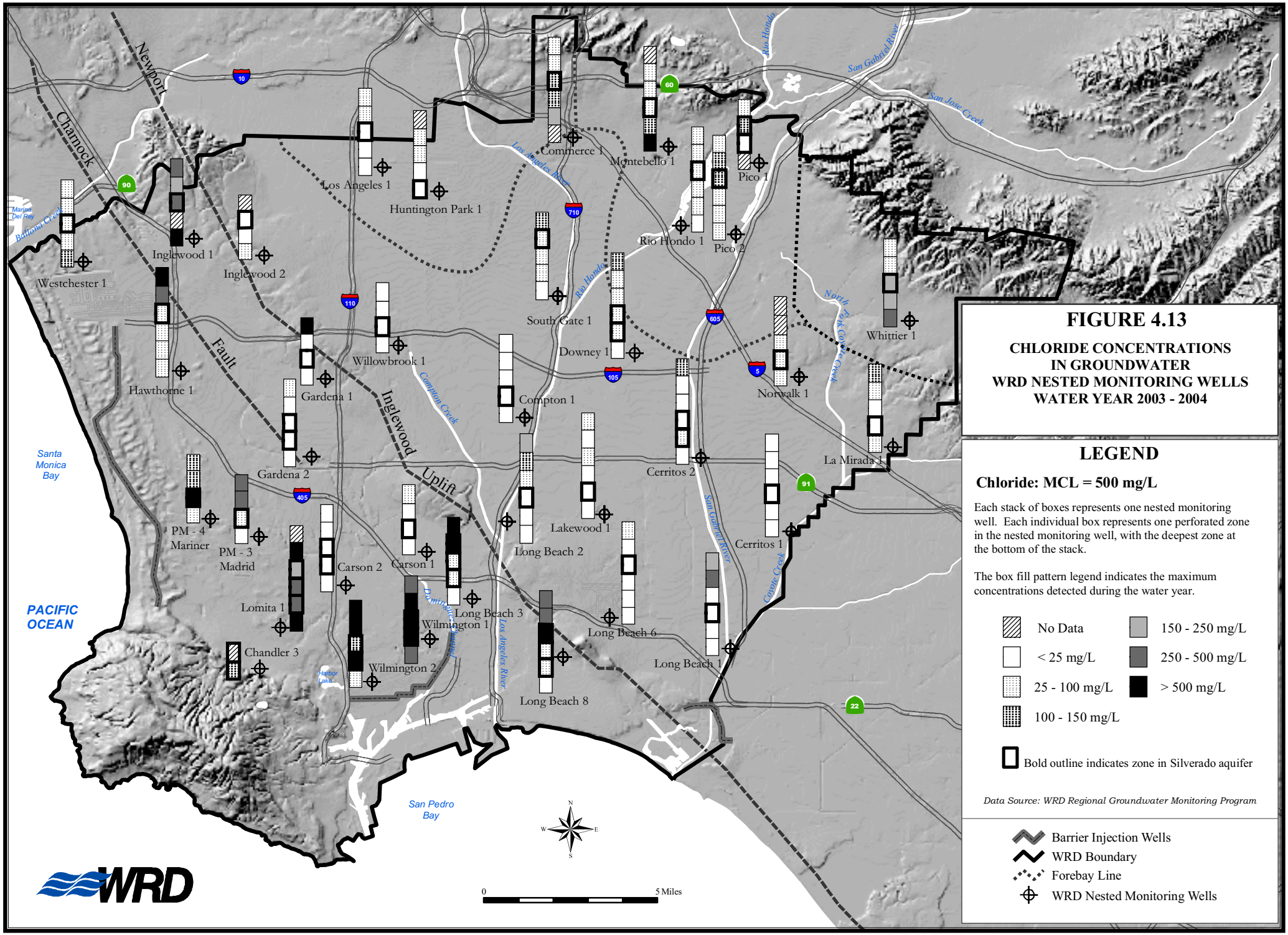


FIGURE 4.12
SULFATE CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
Sulfate: MCL = 500 mg/L
< 25 mg/L
25 - 100 mg/L
100 - 150 mg/L
150 - 250 mg/L
250 - 500 mg/L
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Charnock Fault
Newport
Inglewood
Uplift
Los Angeles River
Rio Hondo
San Gabriel River
San Jose Creek
North Fork Coyote Creek
Coyote Creek
Centinela Creek
Dominguez Channel
Ballona Creek
Marina Del Rey
Santa Monica Bay
PACIFIC OCEAN
San Pedro Bay
Harbor Lake
10
60
90
710
110
605
105
5
91
405
22
N
S
E
W
0
5 Miles
WRD


Newport
Charnock
Fault
Inglewood
Uplift
Los Angeles 1
Huntington Park 1
Commerce 1
Montebello 1
Pico 1
Pico 2
Rio Hondo 1
Inglewood 1
Inglewood 2
Westechester 1
Hawthorne 1
Willowbrook 1
Gardena 1
Gardena 2
South Gate 1
Downey 1
Compton 1
Norwalk 1
Whittier 1
La Mirada 1
Cerritos 2
Cerritos 1
Lakewood 1
Long Beach 2
Long Beach 6
Long Beach 1
Long Beach 8
Long Beach 3
Wilmington 1
Wilmington 2
Carson 1
Carson 2
Lomita 1
Chandler 3
PM - 4
Mariner
PM - 3
Madrid
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
Compton Creek
Coyote Creek
Dominguez Channel
Harbor Lake
Marina Del Rey
Ballona Creek
Santa Monica Bay
PACIFIC OCEAN
San Pedro Bay
0
5 Miles
FIGURE 4.13
CHLORIDE CONCENTRATIONS
IN GROUNDWATER
WRD NESTED MONITORING WELLS
WATER YEAR 2003 - 2004
LEGEND
Chloride: MCL = 500 mg/L
Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.
The box fill pattern legend indicates the maximum concentrations detected during the water year.
No Data
< 25 mg/L
25 - 100 mg/L
100 - 150 mg/L
150 - 250 mg/L
250 - 500 mg/L
> 500 mg/L
Bold outline indicates zone in Silverado aquifer
Data Source: WRD Regional Groundwater Monitoring Program
Barrier Injection Wells
WRD Boundary
Forebay Line
WRD Nested Monitoring Wells
WRD

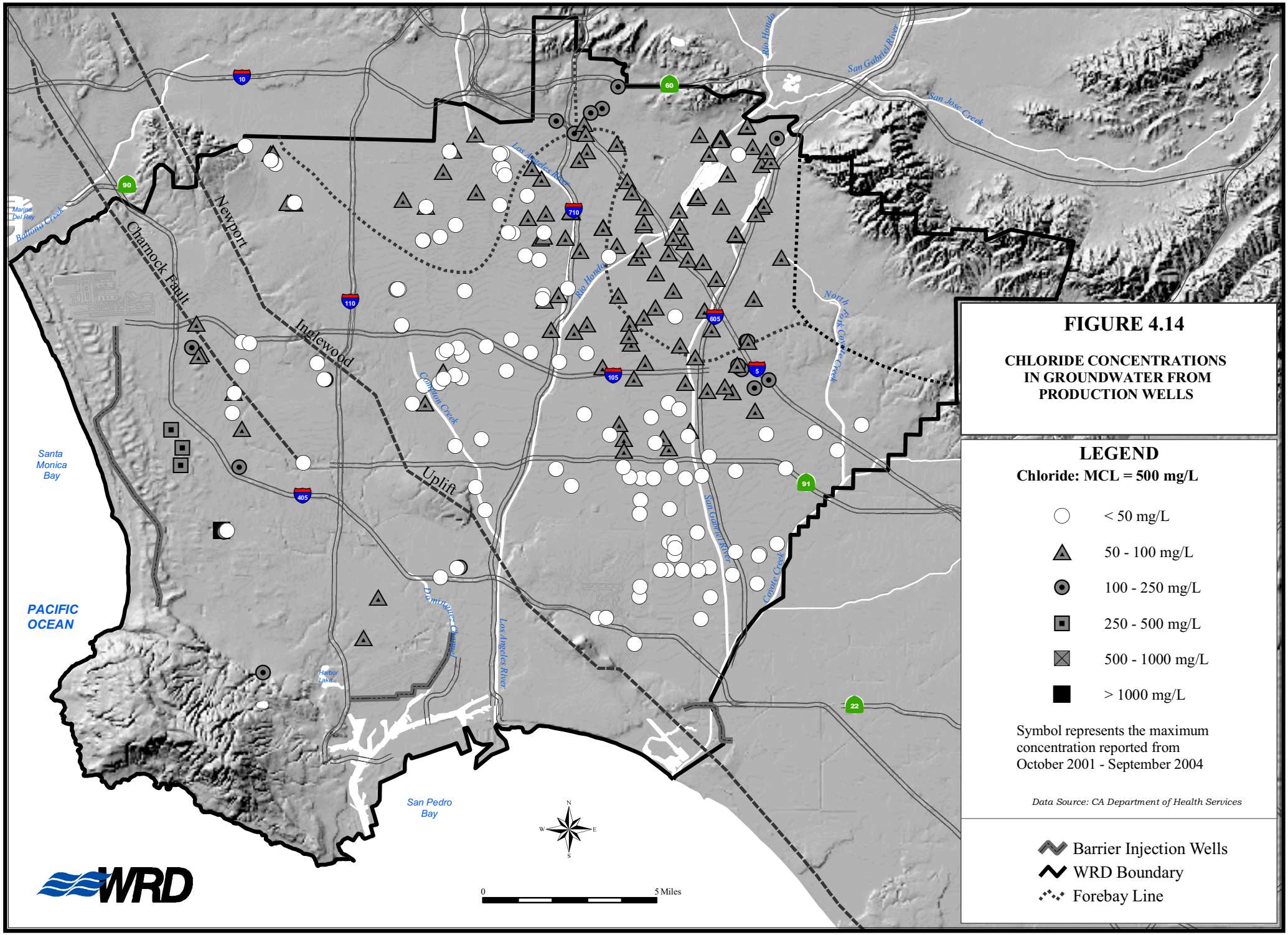


FIGURE 4.14
CHLORIDE CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
Chloride: MCL = 500 mg/L
< 50 mg/L
50 - 100 mg/L
100 - 250 mg/L
250 - 500 mg/L
500 - 1000 mg/L
> 1000 mg/L
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Charnock Fault
Newport
Inglewood
Uplift
Los Angeles River
Rio Hondo
San Gabriel River
San Jose Creek
Compton Creek
North Fork Coyote Creek
Coyote Creek
Dominguez Channel
Harbor Lake
Santa Monica Bay
PACIFIC OCEAN
San Pedro Bay
Marina Del Rey
Ballona Creek
0
5 Miles
WRD

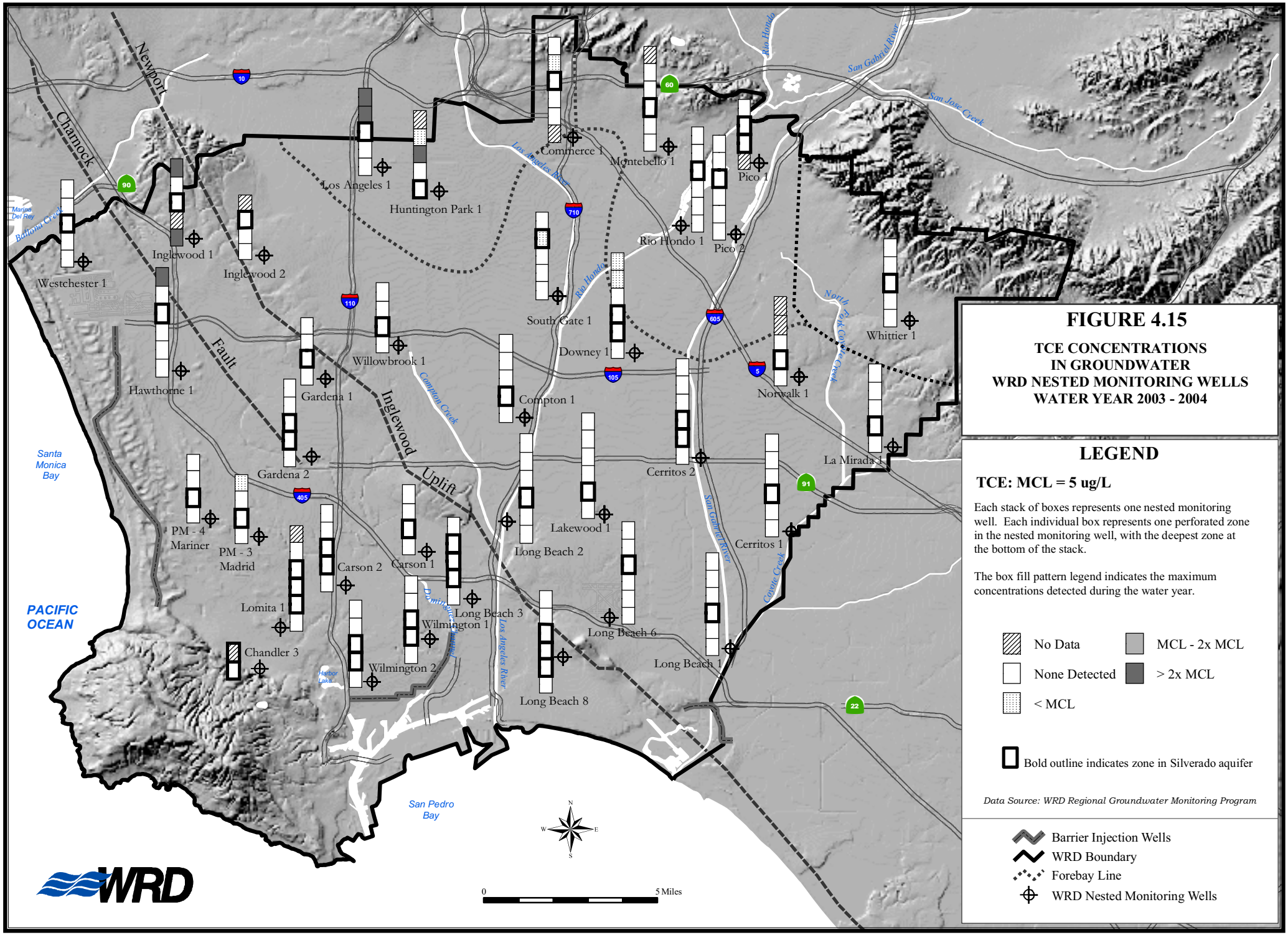


FIGURE 4.15

TCE CONCENTRATIONS IN GROUNDWATER WRD NESTED MONITORING WELLS WATER YEAR 2003 - 2004

LEGEND

TCE: MCL = 5 ug/L

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- None Detected
- < MCL
- MCL - 2x MCL
- > 2x MCL

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

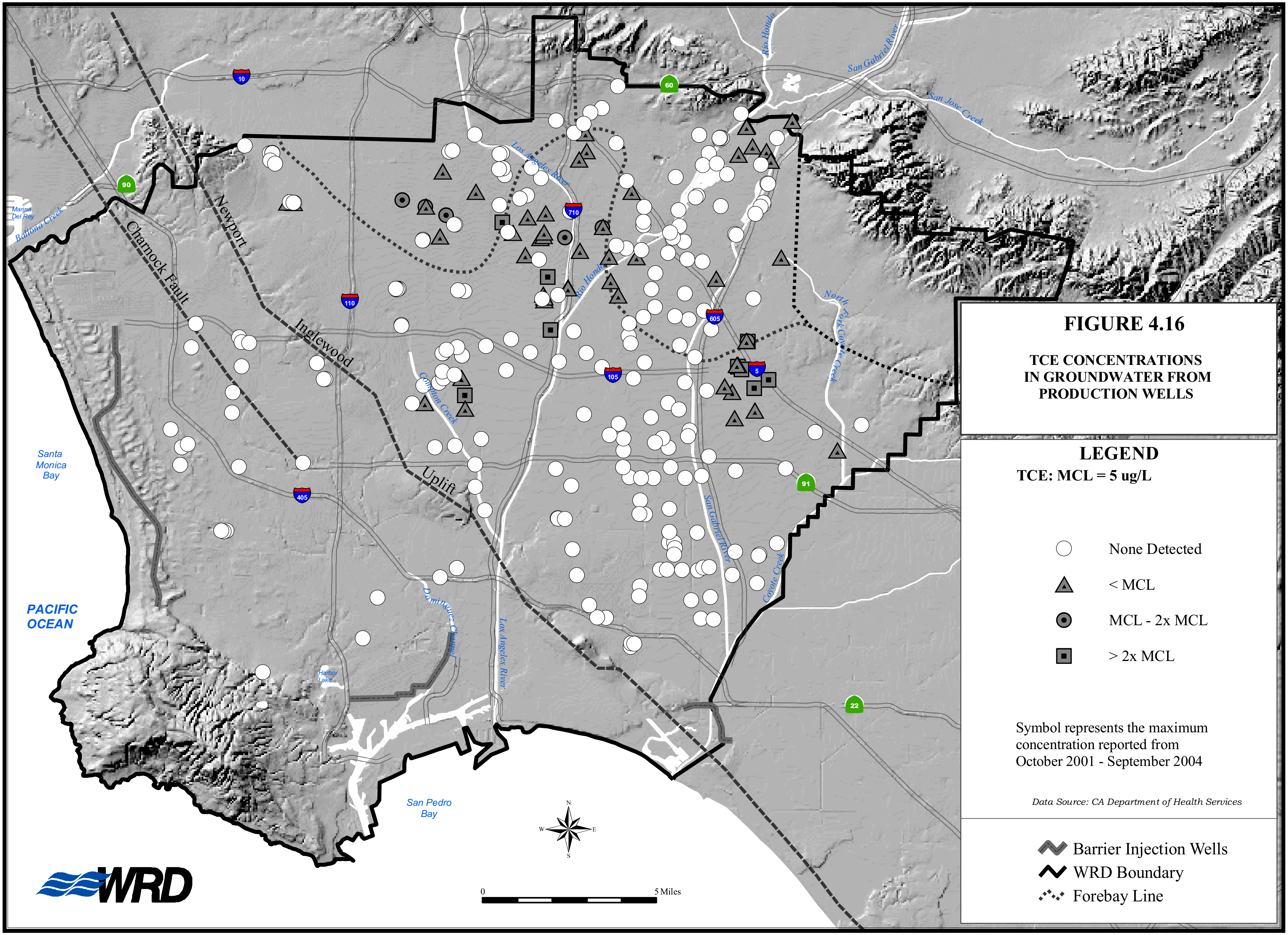


FIGURE 4.16

TCE CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS

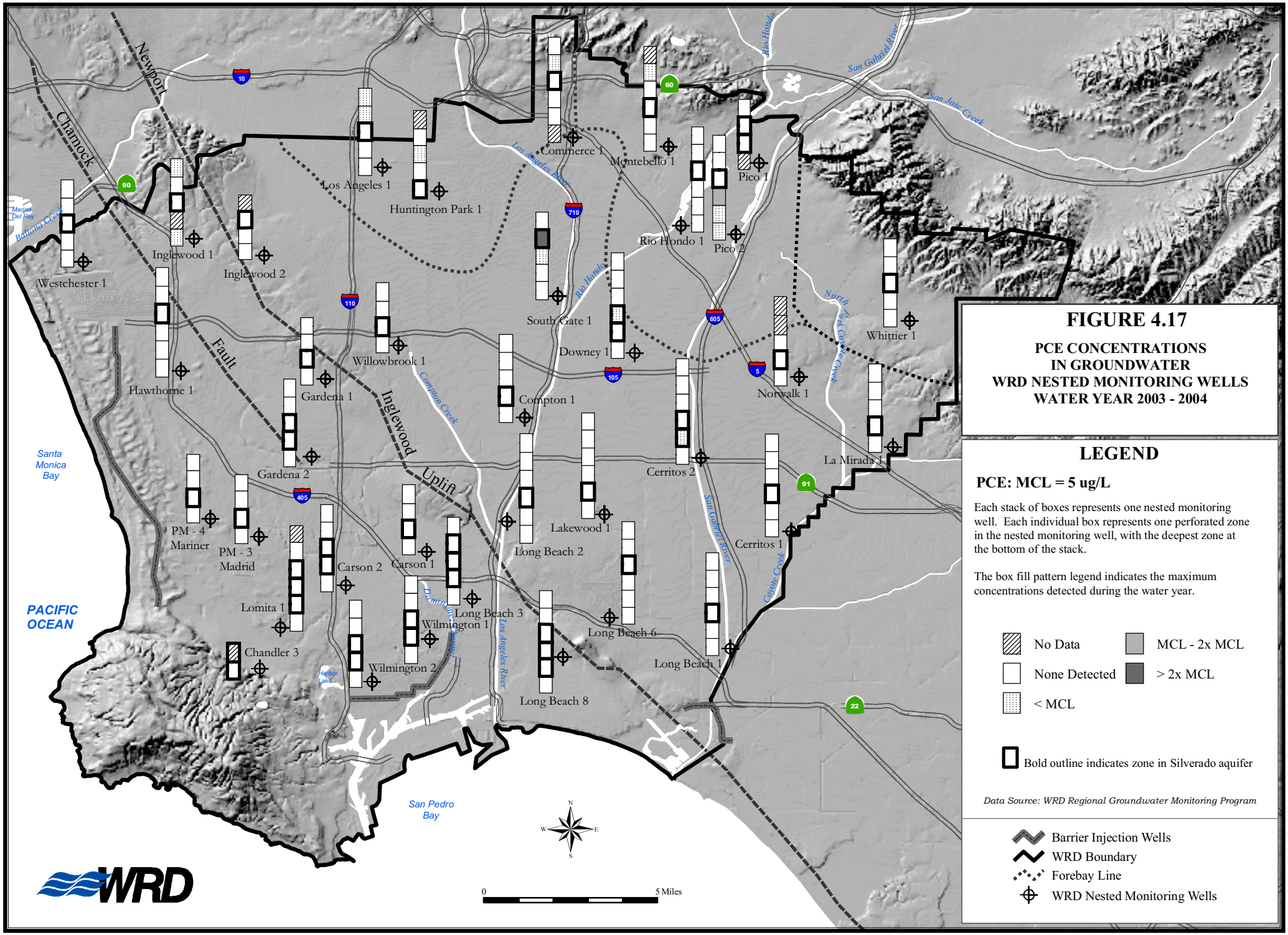


FIGURE 4.17

PCE CONCENTRATIONS IN GROUNDWATER WRD NESTED MONITORING WELLS WATER YEAR 2003 - 2004

LEGEND

PCE: MCL = 5 ug/L

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- None Detected
- < MCL
- MCL - 2x MCL
- > 2x MCL

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

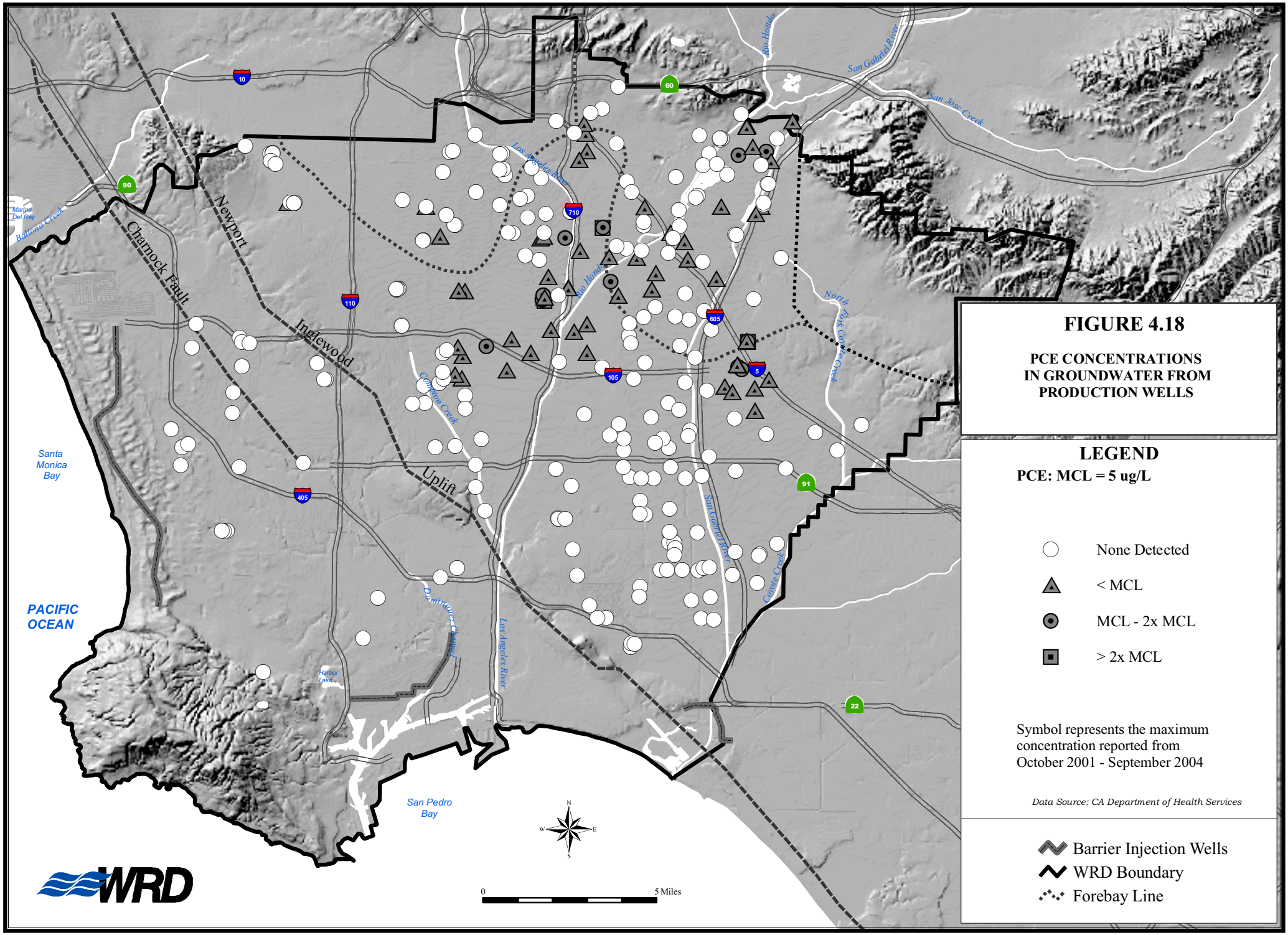


FIGURE 4.18
PCE CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
PCE: MCL = 5 ug/L
None Detected
< MCL
MCL - 2x MCL
> 2x MCL
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Newport
Charnock Fault
Inglewood
Uplift
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
North Fork Coyote Creek
Coyote Creek
Compton Creek
Dominguez Channel
Bolsa Chica
Bellomer Creek
Santa Monica Bay
PACIFIC OCEAN
San Pedro Bay
Harbor Lake
WRD
0
5 Miles

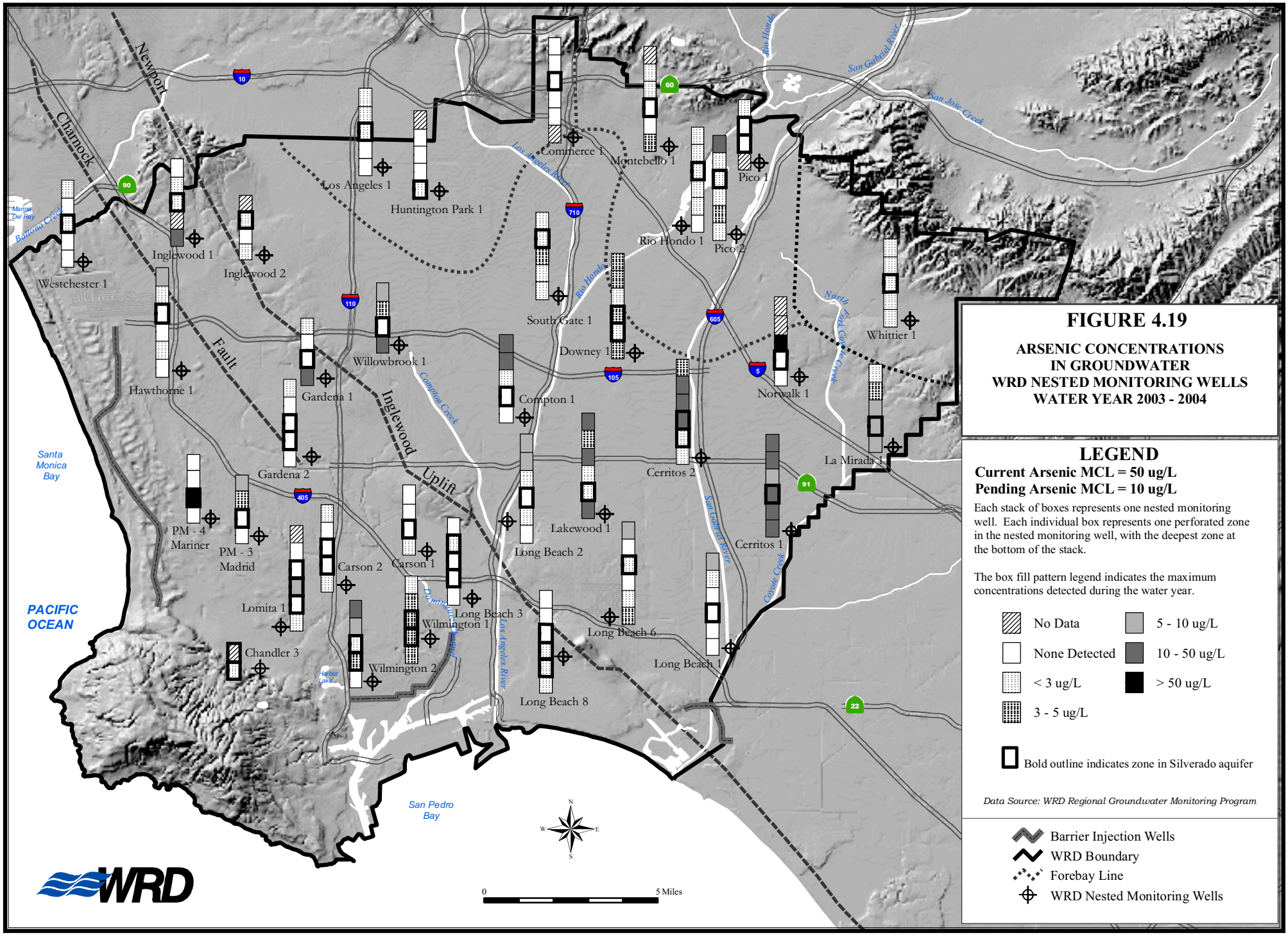


FIGURE 4.19

ARSENIC CONCENTRATIONS IN GROUNDWATER WRD NESTED MONITORING WELLS WATER YEAR 2003 - 2004

LEGEND

Current Arsenic MCL = 50 ug/L
Pending Arsenic MCL = 10 ug/L

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- None Detected
- < 3 ug/L
- 3 - 5 ug/L
- 5 - 10 ug/L
- 10 - 50 ug/L
- > 50 ug/L

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

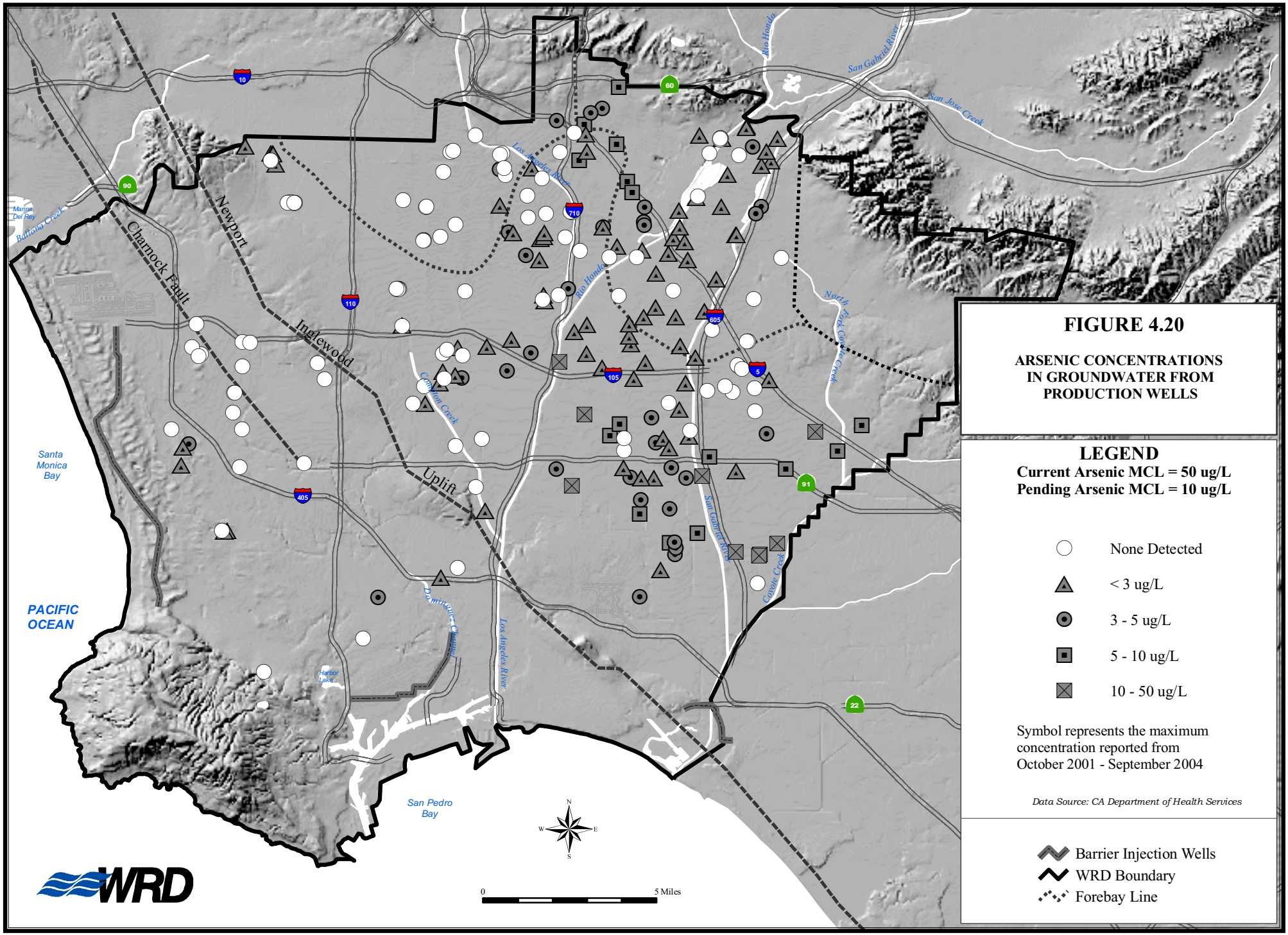


FIGURE 4.20
ARSENIC CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
Current Arsenic MCL = 50 ug/L
Pending Arsenic MCL = 10 ug/L
None Detected
< 3 ug/L
3 - 5 ug/L
5 - 10 ug/L
10 - 50 ug/L
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Charnock Fault
Newport
Inglewood
Uplift
PACIFIC OCEAN
Santa Monica Bay
San Pedro Bay
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
Coyote Creek
Dominguez Channel
Harbor Lake
Marina Del Rey
Ballona Creek
0
5 Miles
WRD

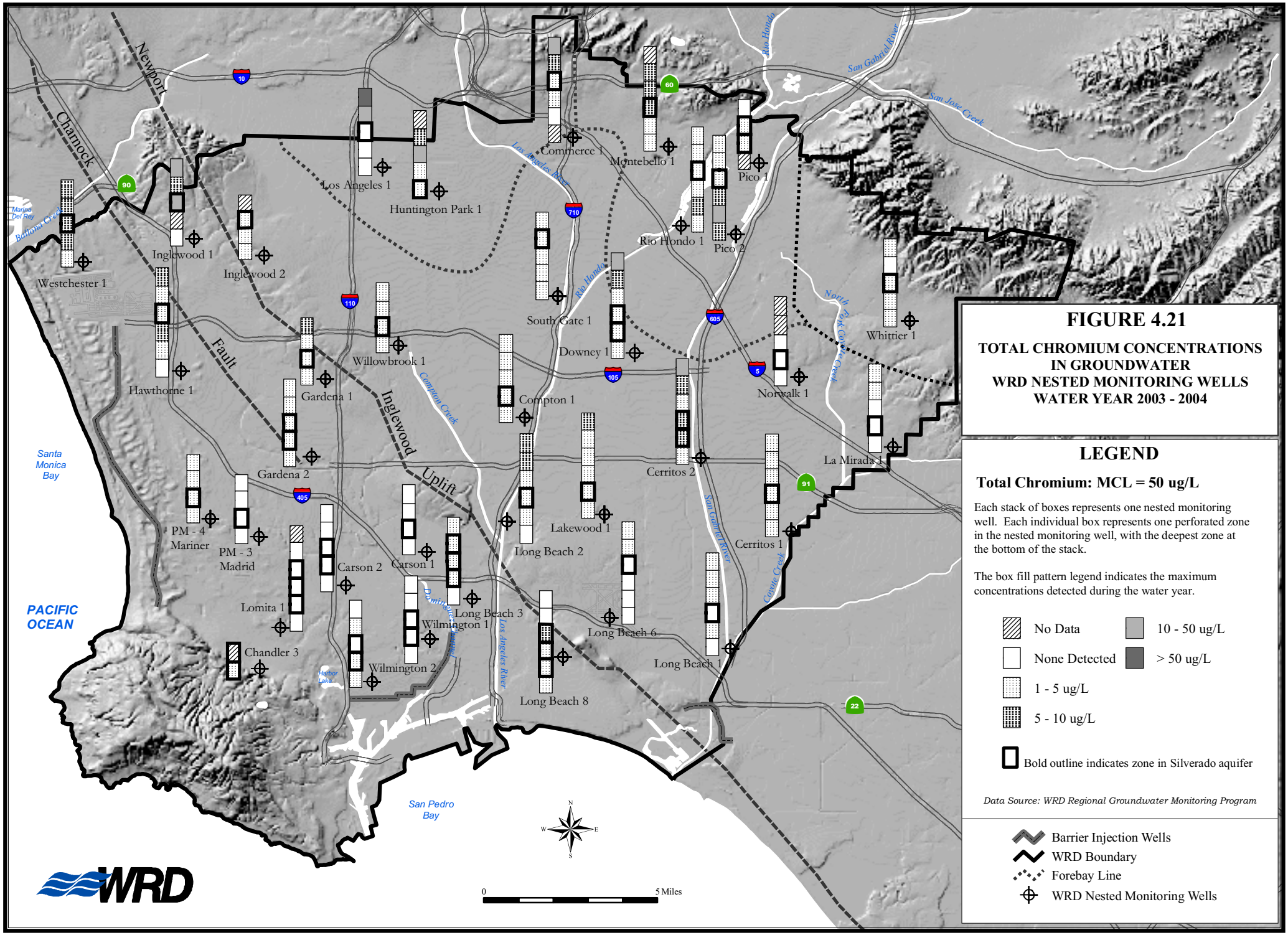


FIGURE 4.21

TOTAL CHROMIUM CONCENTRATIONS IN GROUNDWATER WRD NESTED MONITORING WELLS WATER YEAR 2003 - 2004

LEGEND

Total Chromium: MCL = 50 ug/L

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- None Detected
- 1 - 5 ug/L
- 5 - 10 ug/L
- 10 - 50 ug/L
- > 50 ug/L

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

WRD

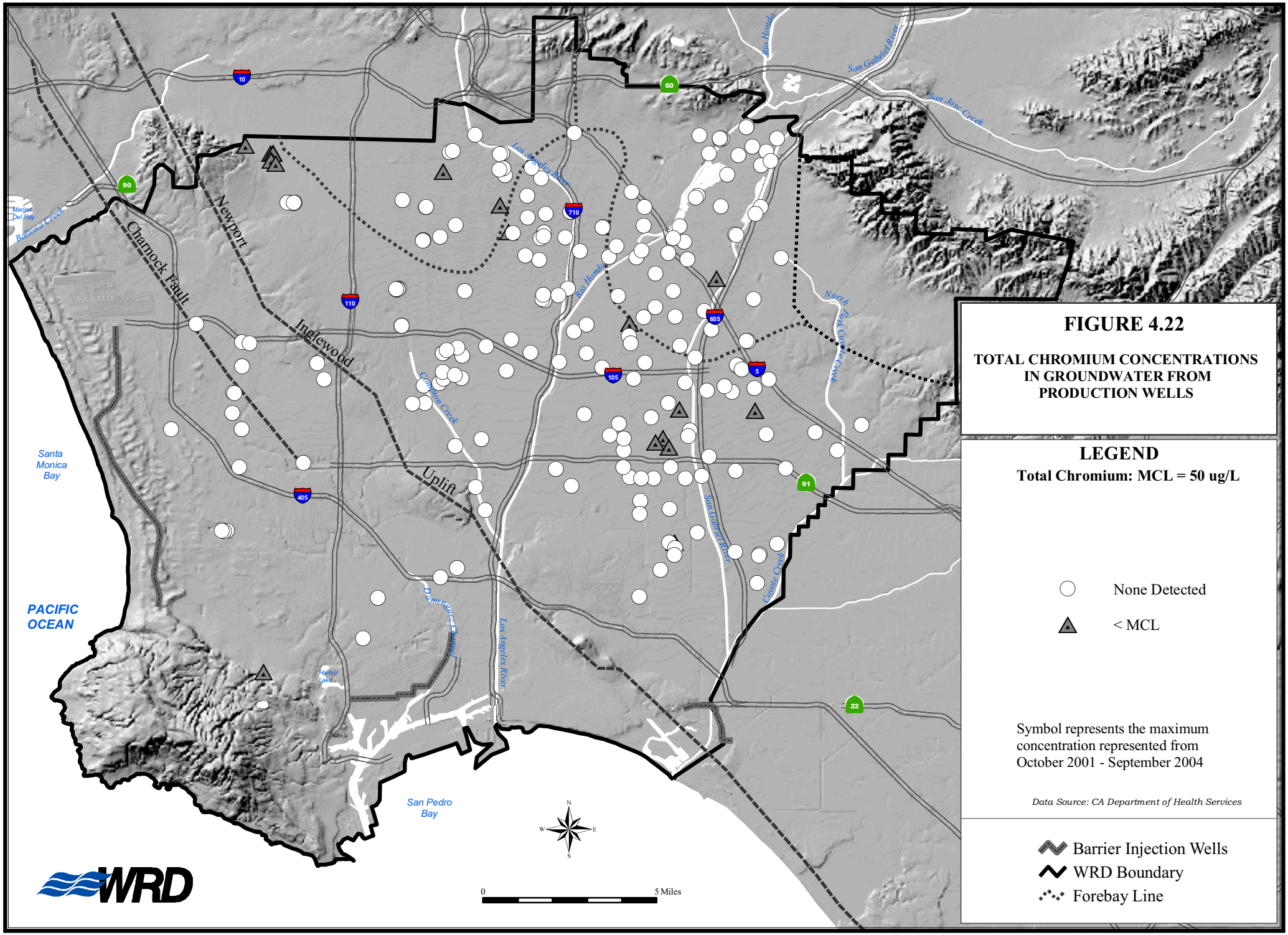


FIGURE 4.22
TOTAL CHROMIUM CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
Total Chromium: MCL = 50 ug/L
None Detected
< MCL
Symbol represents the maximum concentration represented from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Charnock Fault
Newport
Inglewood
Uplift
PACIFIC OCEAN
Santa Monica Bay
San Pedro Bay
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
North Fork Coyote Creek
Coyote Creek
Compton Creek
Dominguez Channel
Ballona Creek
Harbor Lake
0
5 Miles
WRD

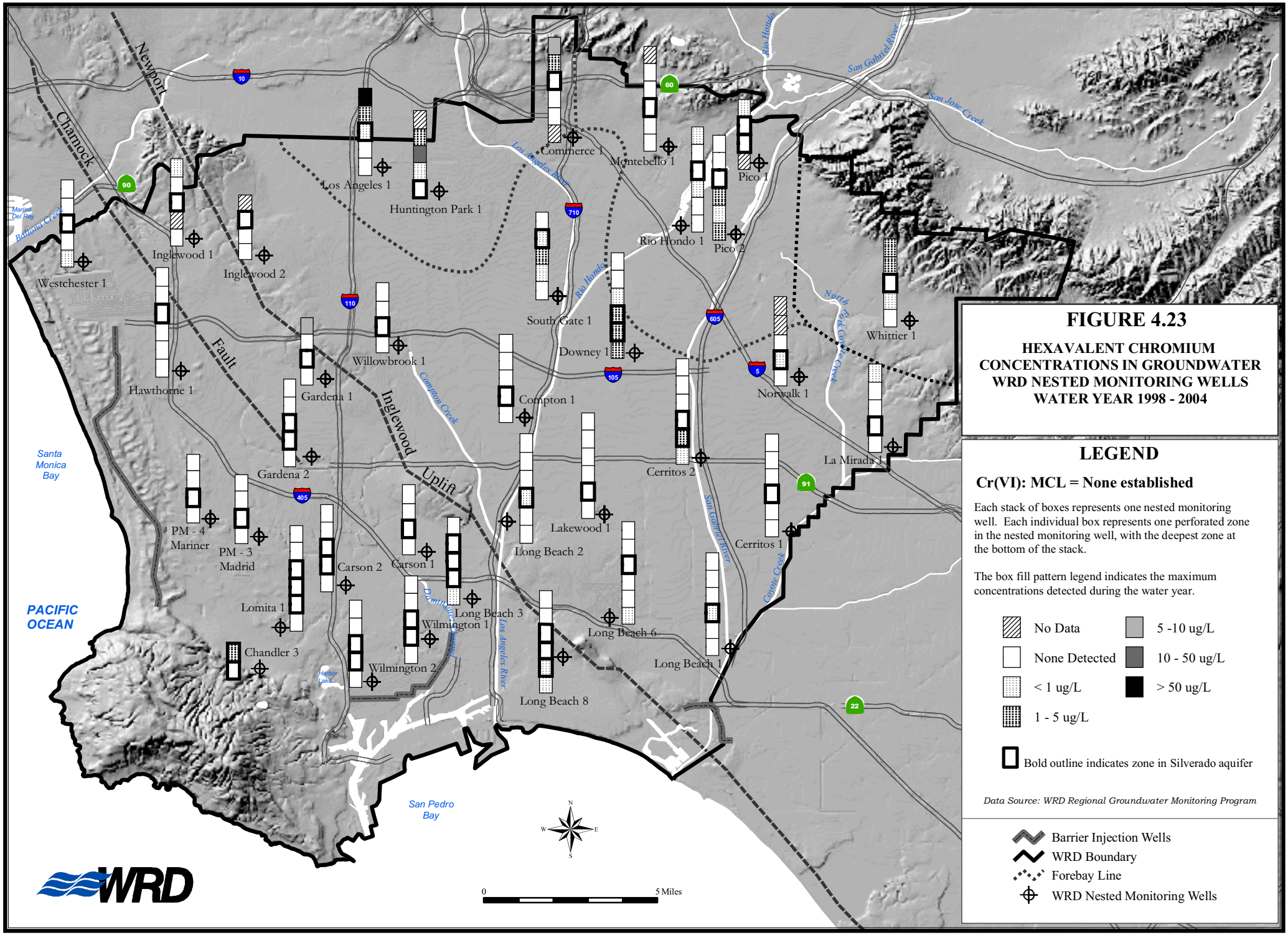


FIGURE 4.23

HEXAVALENT CHROMIUM CONCENTRATIONS IN GROUNDWATER WRD NESTED MONITORING WELLS WATER YEAR 1998 - 2004

LEGEND

Cr(VI): MCL = None established

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- None Detected
- < 1 ug/L
- 1 - 5 ug/L
- 5 -10 ug/L
- 10 - 50 ug/L
- > 50 ug/L

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

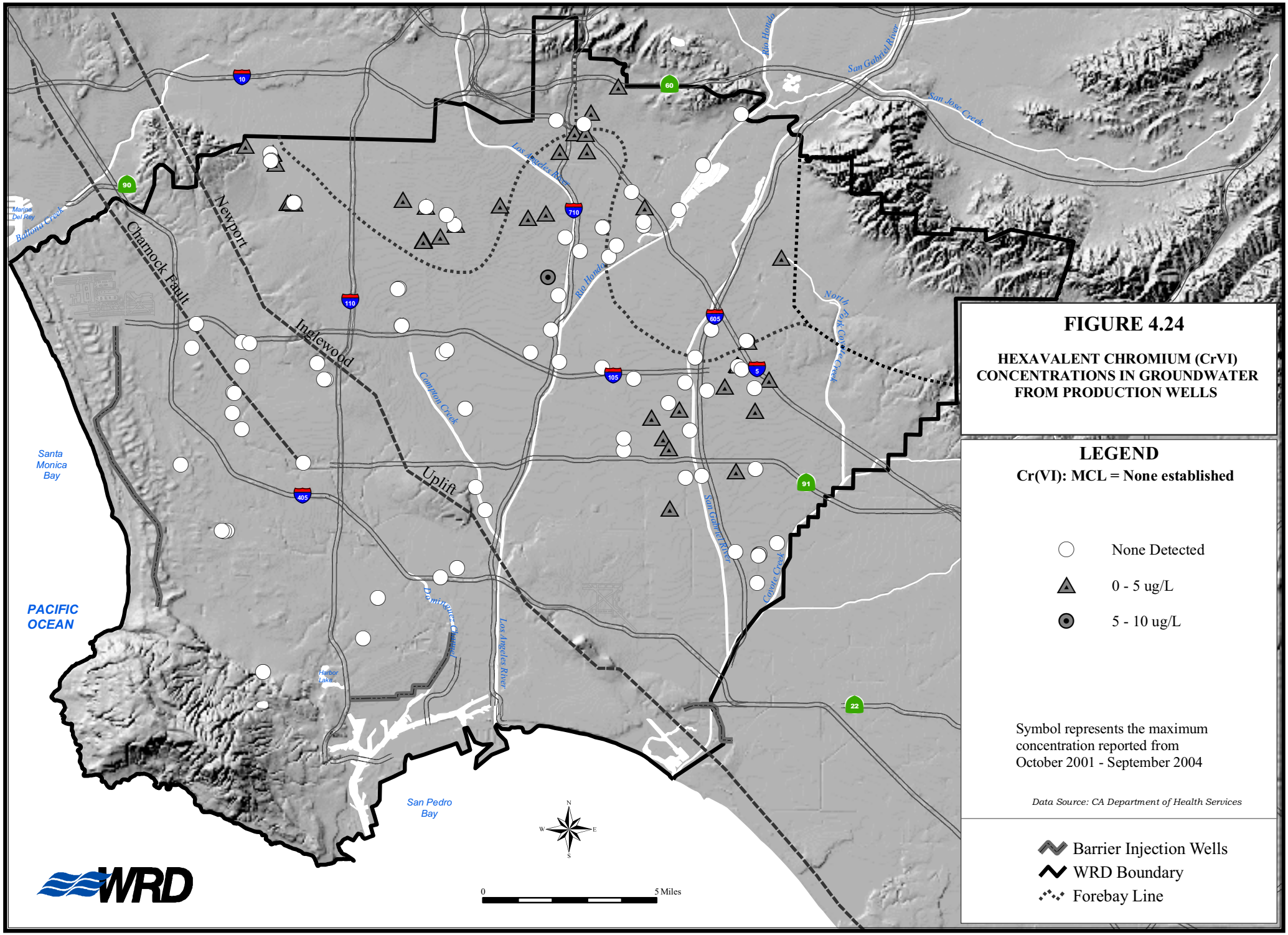


FIGURE 4.24
HEXAVALENT CHROMIUM (CrVI) CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
Cr(VI): MCL = None established
None Detected
0 - 5 ug/L
5 - 10 ug/L
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Charnock Fault
Newport
Inglewood
Uplift
Los Angeles River
Rio Hondo
San Gabriel River
San Jose Creek
North Fork Coyote Creek
Compton Creek
Coyote Creek
Dominguez Channel
Harbor Lake
Marina Del Rey
Ballona Creek
Santa Monica Bay
PACIFIC OCEAN
San Pedro Bay
10
60
90
710
110
605
105
5
405
91
22
N
S
E
W
0
5 Miles
WRD

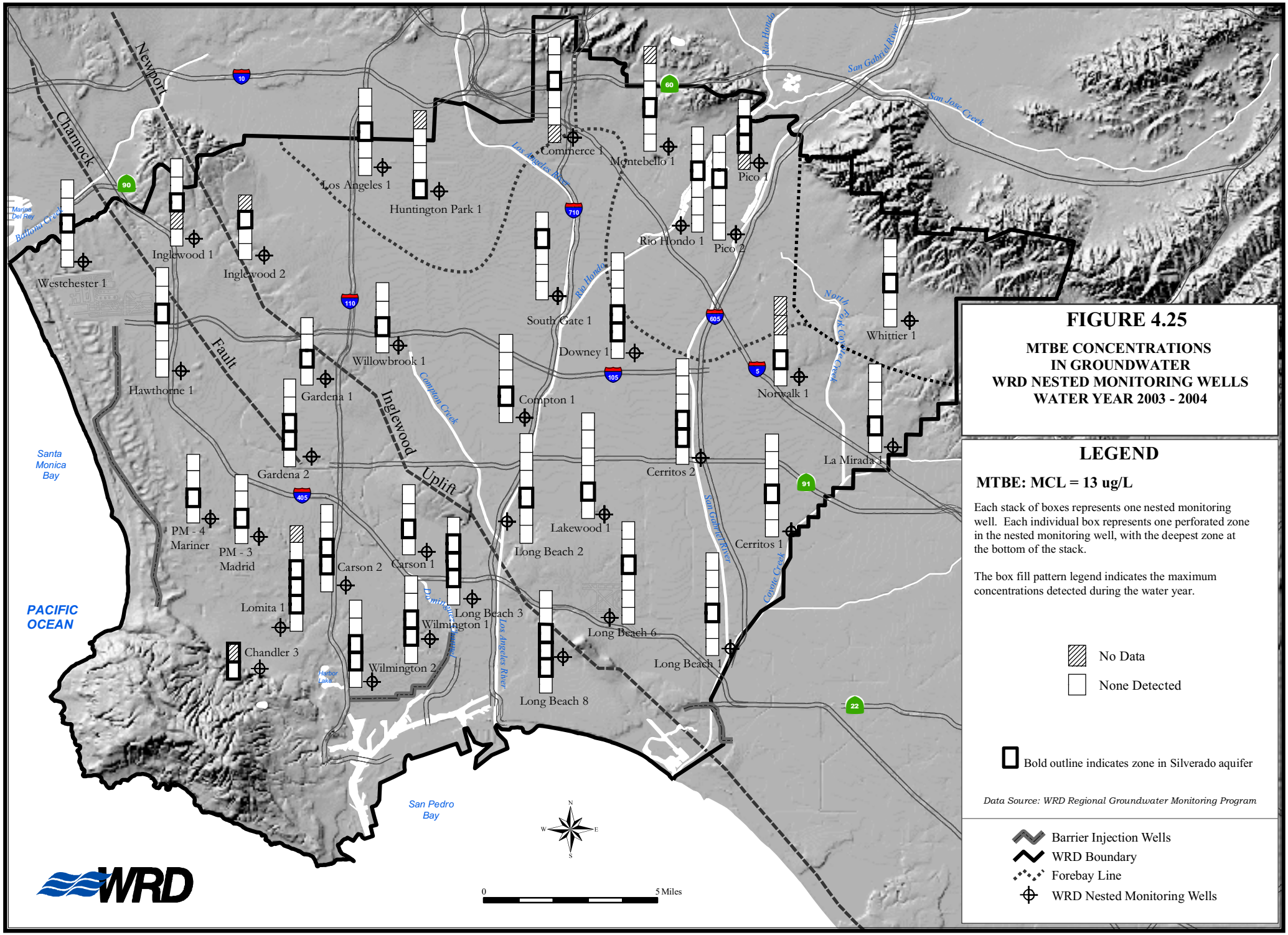


FIGURE 4.25

MTBE CONCENTRATIONS IN GROUNDWATER
WRD NESTED MONITORING WELLS
WATER YEAR 2003 - 2004

LEGEND

MTBE: MCL = 13 ug/L

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- None Detected

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

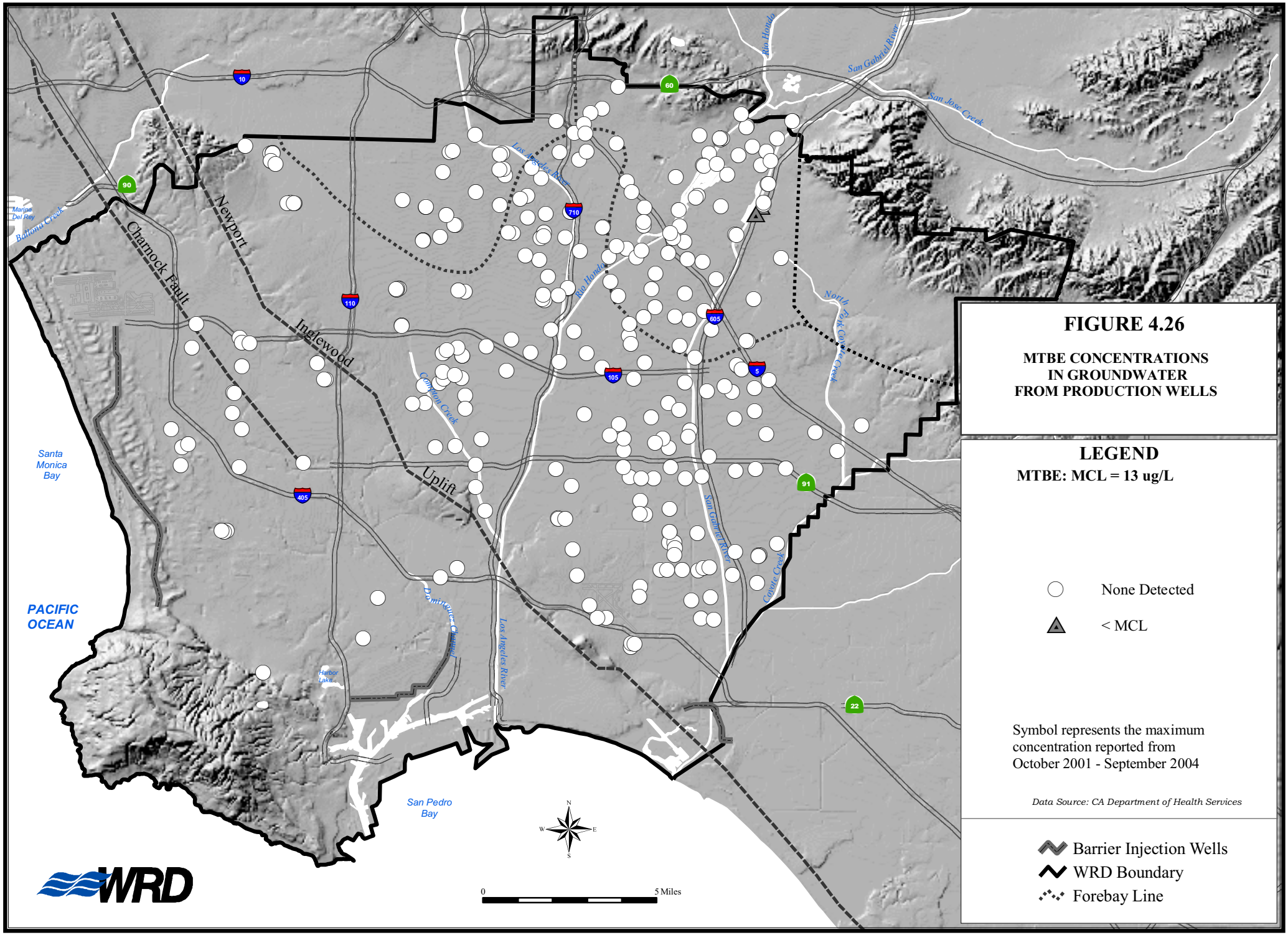


FIGURE 4.26
MTBE CONCENTRATIONS
IN GROUNDWATER
FROM PRODUCTION WELLS
LEGEND
MTBE: MCL = 13 ug/L
None Detected
< MCL
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Newport
Charnock Fault
Inglewood
Uplift
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
North Fork Coyote Creek
Coyote Creek
Compton Creek
Dominguez Channel
Bolsa Chica
Bellflower Creek
Marina Del Rey
Harbor Lake
Santa Monica Bay
San Pedro Bay
PACIFIC OCEAN
WRD
0
5 Miles
N
S
E
W

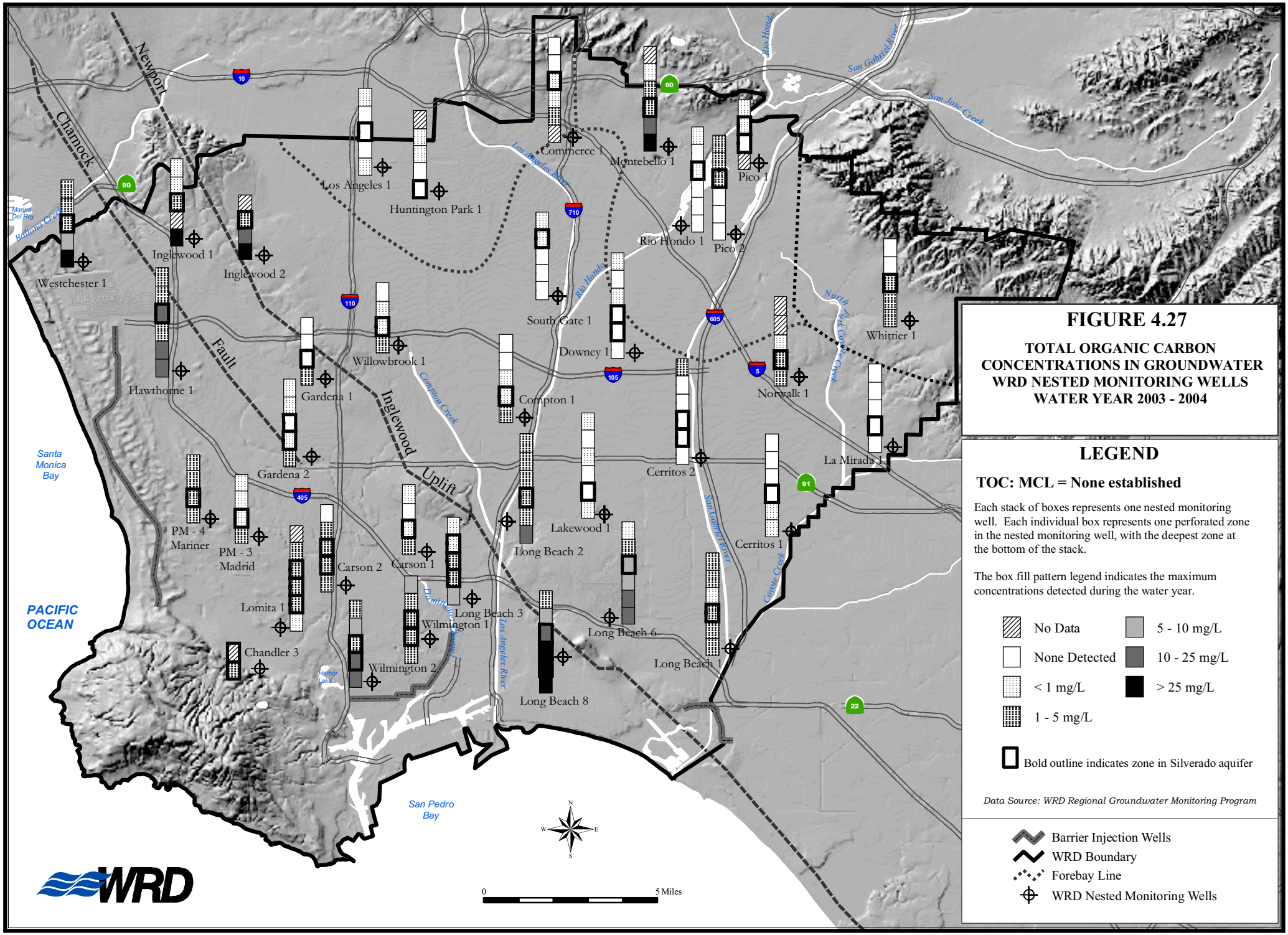


FIGURE 4.27

TOTAL ORGANIC CARBON CONCENTRATIONS IN GROUNDWATER WRD NESTED MONITORING WELLS WATER YEAR 2003 - 2004

LEGEND

TOC: MCL = None established

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- None Detected
- < 1 mg/L
- 1 - 5 mg/L
- 5 - 10 mg/L
- 10 - 25 mg/L
- > 25 mg/L

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

WRD

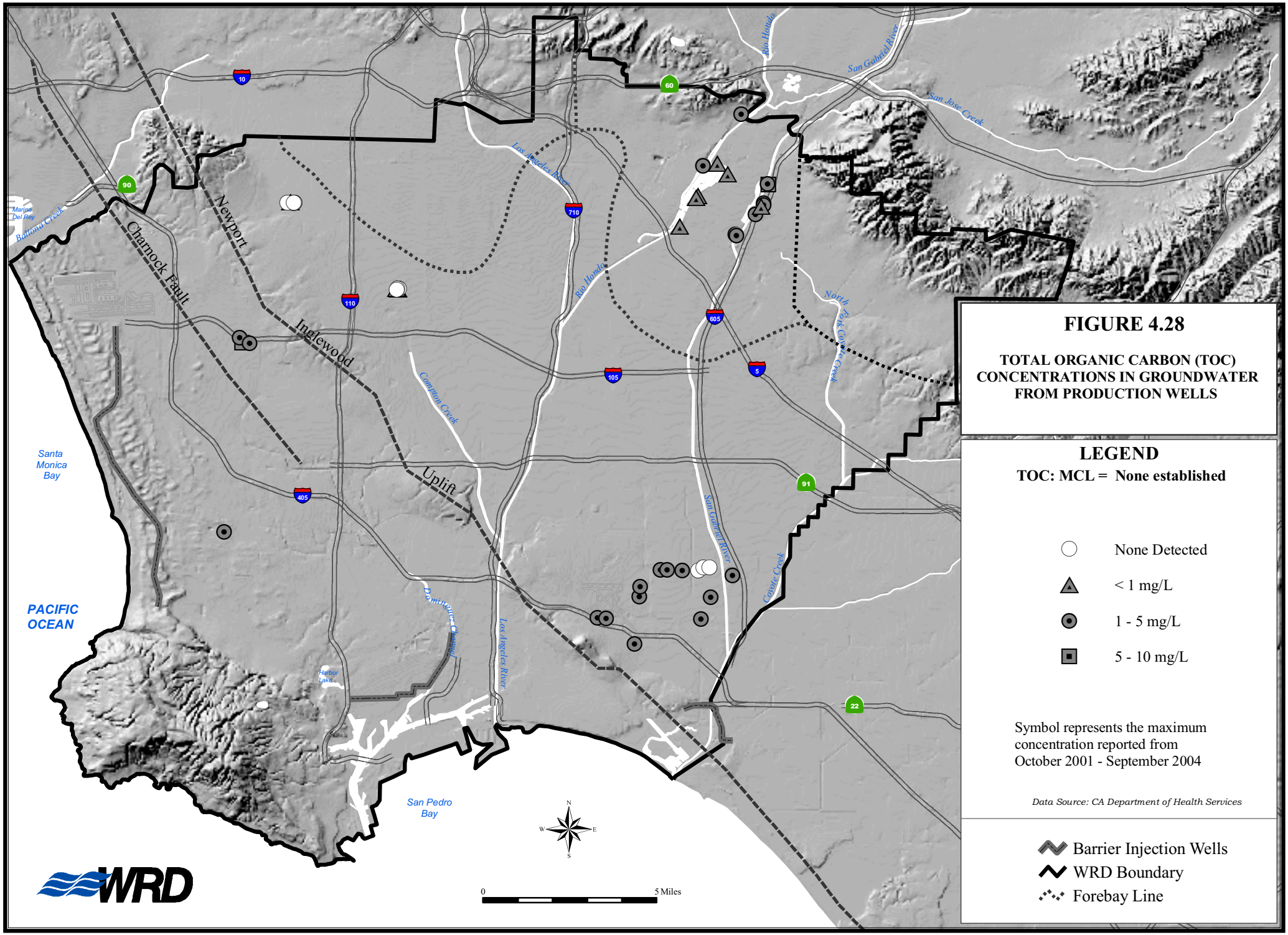


FIGURE 4.28
TOTAL ORGANIC CARBON (TOC) CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
TOC: MCL = None established
None Detected
< 1 mg/L
1 - 5 mg/L
5 - 10 mg/L
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Charnock Fault
Newport
Inglewood
Uplift
Los Angeles River
Rio Hondo
San Gabriel River
San Jose Creek
North Fork Coyote Creek
Coyote Creek
Compton Creek
Dominguez Channel
Ballona Creek
Marina Del Rey
Harbor Lake
Santa Monica Bay
PACIFIC OCEAN
San Pedro Bay
10
60
90
710
110
605
105
5
91
405
22
N
S
E
W
0
5 Miles
WRD

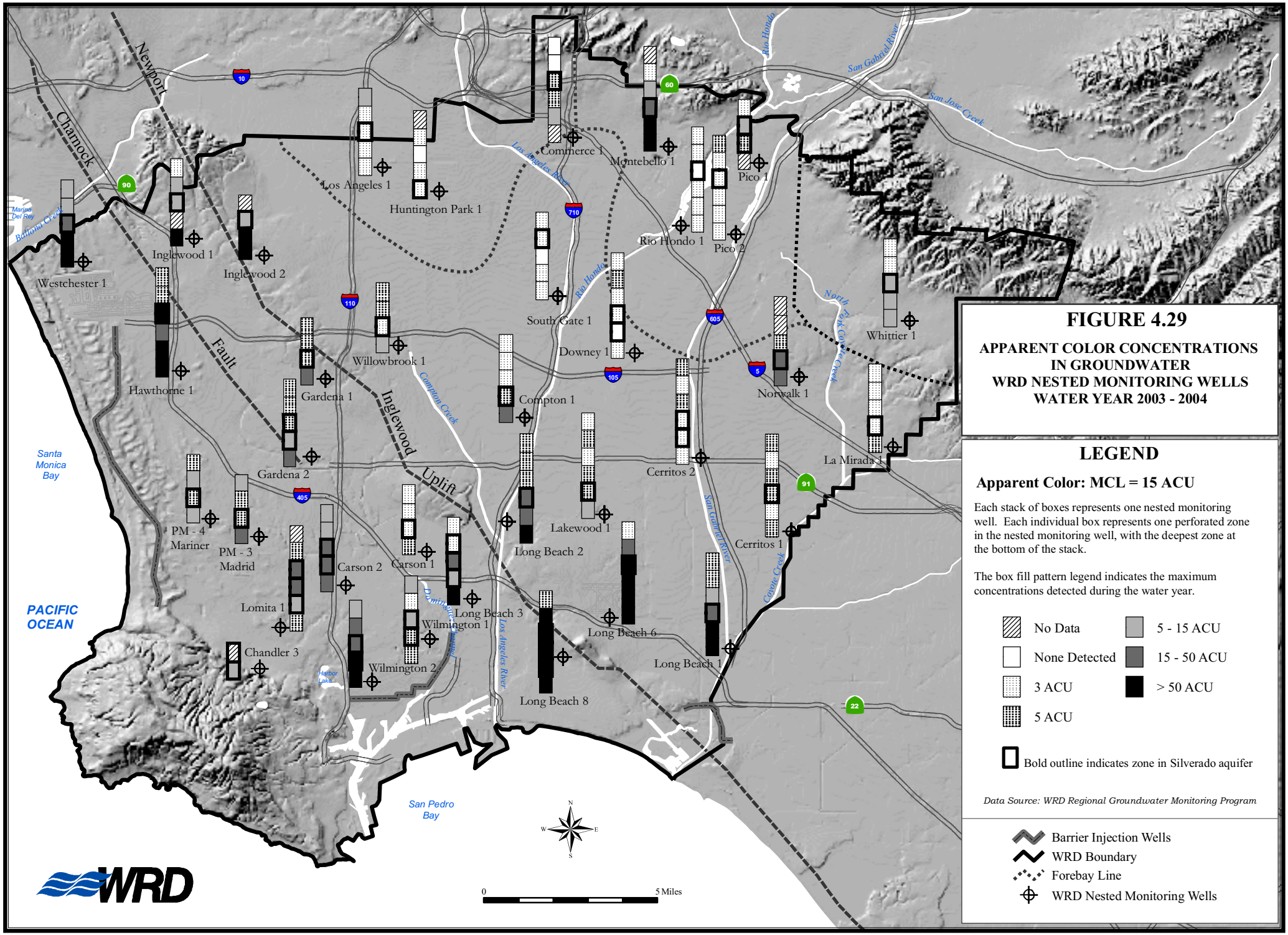


FIGURE 4.29

APPARENT COLOR CONCENTRATIONS IN GROUNDWATER
WRD NESTED MONITORING WELLS
WATER YEAR 2003 - 2004

LEGEND

Apparent Color: MCL = 15 ACU

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- None Detected
- 3 ACU
- 5 ACU
- 5 - 15 ACU
- 15 - 50 ACU
- > 50 ACU

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

WRD

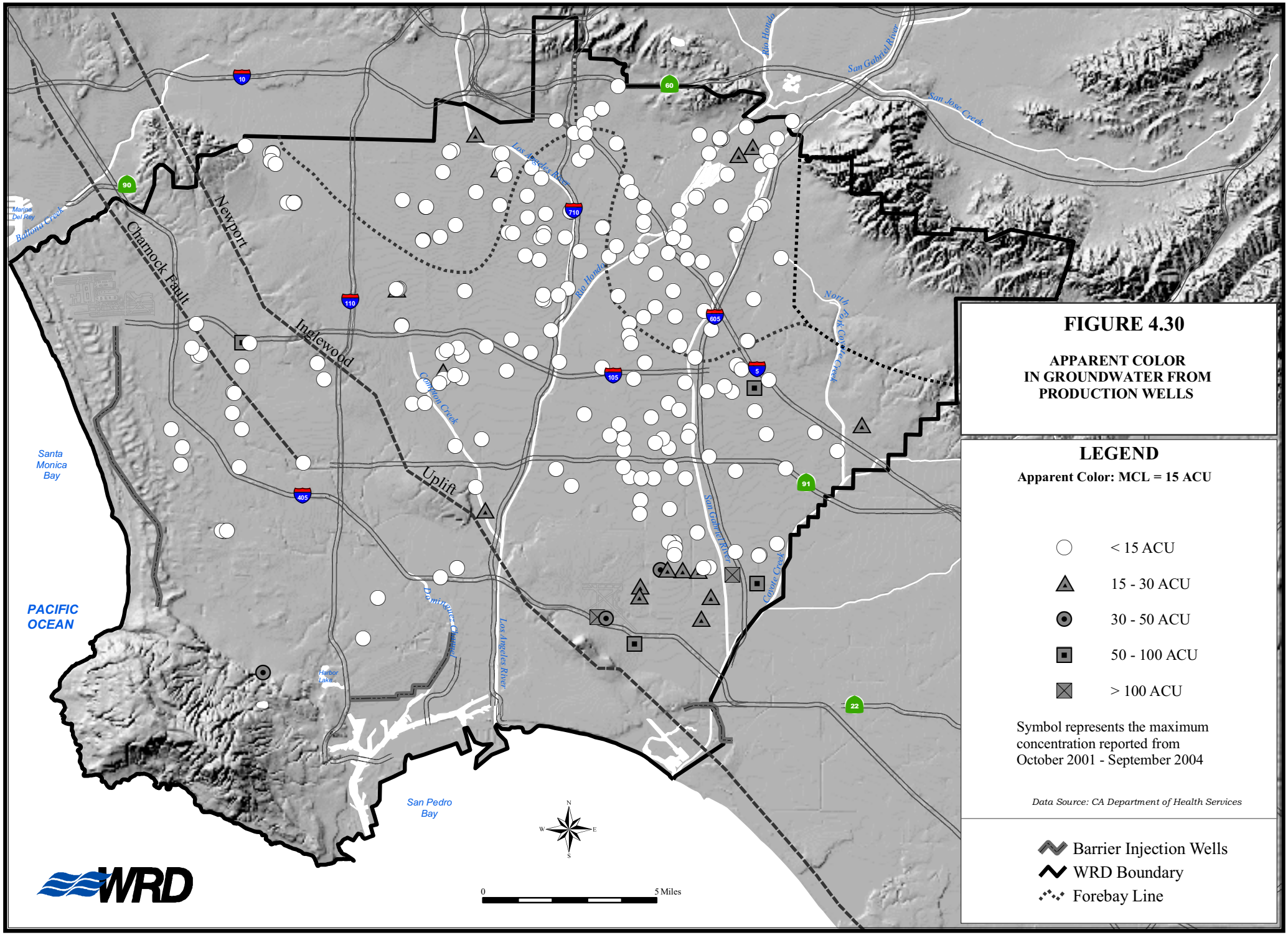


FIGURE 4.30
APPARENT COLOR
IN GROUNDWATER FROM
PRODUCTION WELLS
LEGEND
Apparent Color: MCL = 15 ACU
< 15 ACU
15 - 30 ACU
30 - 50 ACU
50 - 100 ACU
> 100 ACU
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Newport
Charnock Fault
Inglewood
Uplift
Los Angeles River
San Gabriel River
Rio Hondo
San Jose Creek
North Fork Coyote Creek
Coyote Creek
Compton Creek
Dominguez Channel
Bolsa Chica
Bellflower Creek
Marina Del Rey
Harbor Lake
Santa Monica Bay
San Pedro Bay
PACIFIC OCEAN
0
5 Miles
WRD

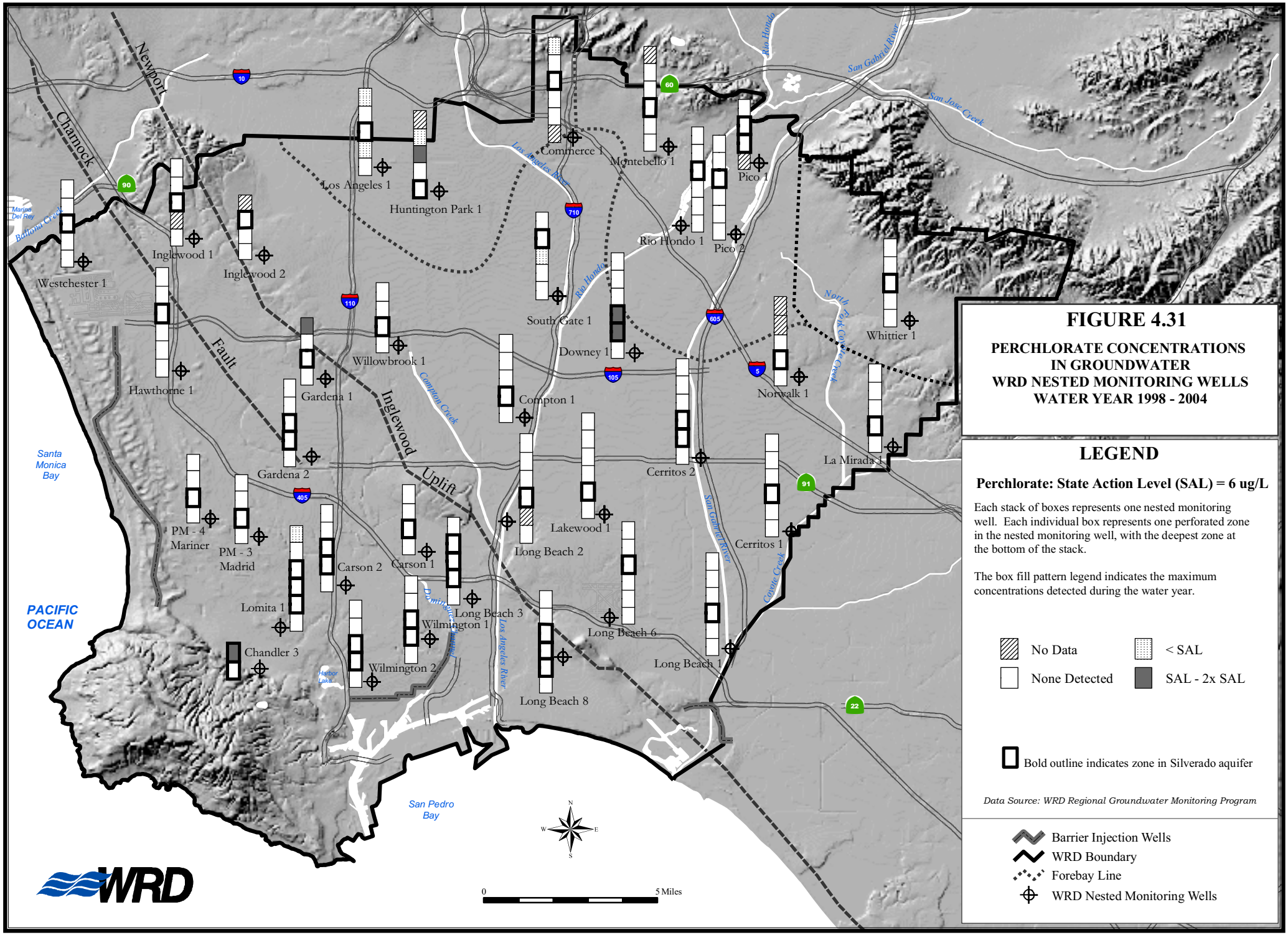


FIGURE 4.31

PERCHLORATE CONCENTRATIONS IN GROUNDWATER WRD NESTED MONITORING WELLS WATER YEAR 1998 - 2004

LEGEND

Perchlorate: State Action Level (SAL) = 6 ug/L

Each stack of boxes represents one nested monitoring well. Each individual box represents one perforated zone in the nested monitoring well, with the deepest zone at the bottom of the stack.

The box fill pattern legend indicates the maximum concentrations detected during the water year.

- No Data
- < SAL
- None Detected
- SAL - 2x SAL

Bold outline indicates zone in Silverado aquifer

Data Source: WRD Regional Groundwater Monitoring Program

- Barrier Injection Wells
- WRD Boundary
- Forebay Line
- WRD Nested Monitoring Wells

WRD

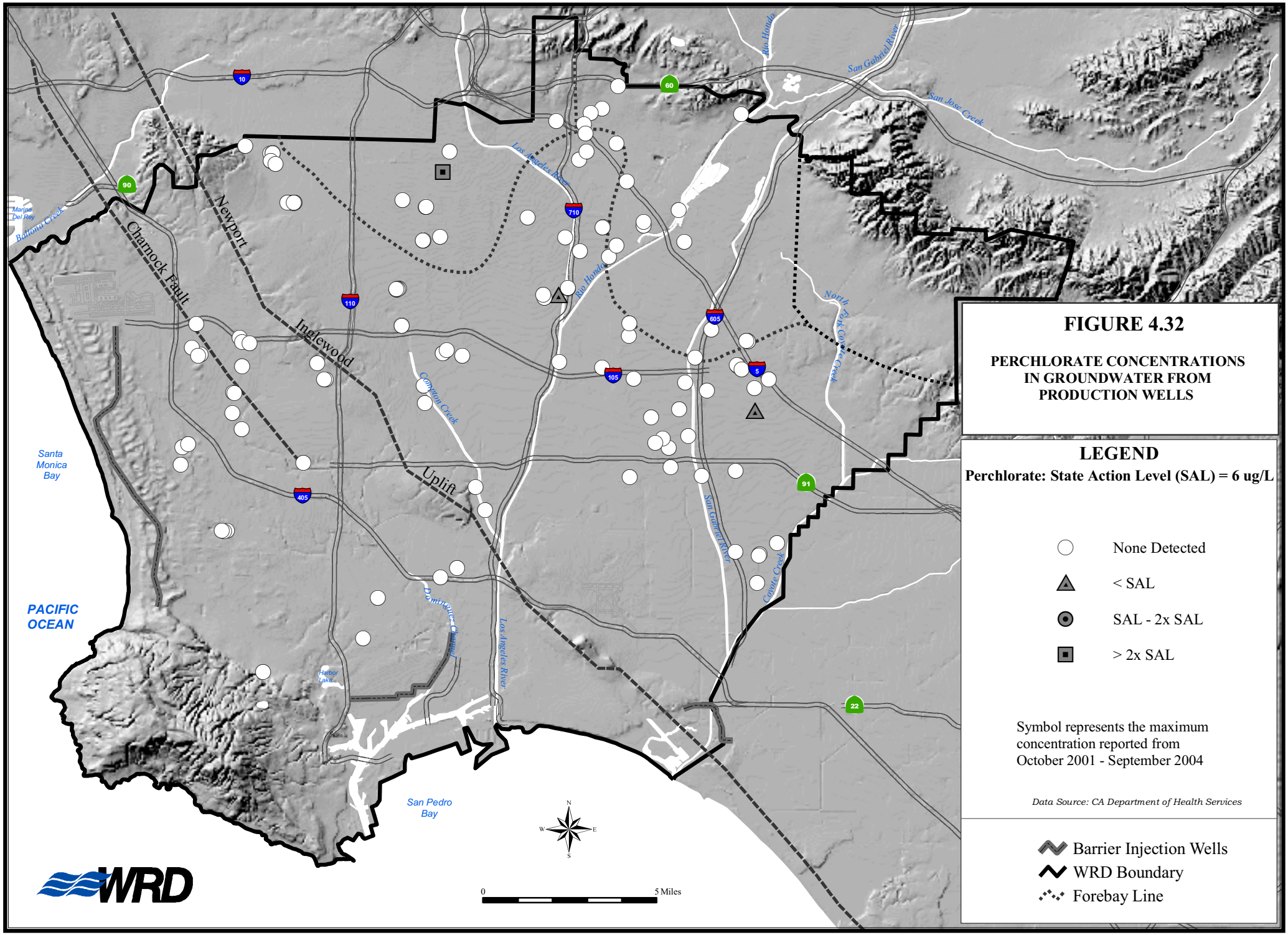


FIGURE 4.32
PERCHLORATE CONCENTRATIONS IN GROUNDWATER FROM PRODUCTION WELLS
LEGEND
Perchlorate: State Action Level (SAL) = 6 ug/L
None Detected
< SAL
SAL - 2x SAL
> 2x SAL
Symbol represents the maximum concentration reported from October 2001 - September 2004
Data Source: CA Department of Health Services
Barrier Injection Wells
WRD Boundary
Forebay Line
Charnock Fault
Newport
Inglewood
Uplift
Los Angeles River
Rio Hondo
San Gabriel River
San Jose Creek
North Fork Coyote Creek
Compton Creek
Coyote Creek
Dominguez Channel
Ballona Creek
Marina Del Rey
Harbor Lake
Santa Monica Bay
San Pedro Bay
PACIFIC OCEAN
10
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90
710
110
605
105
5
91
405
22
N
S
E
W
0
5 Miles
WRD

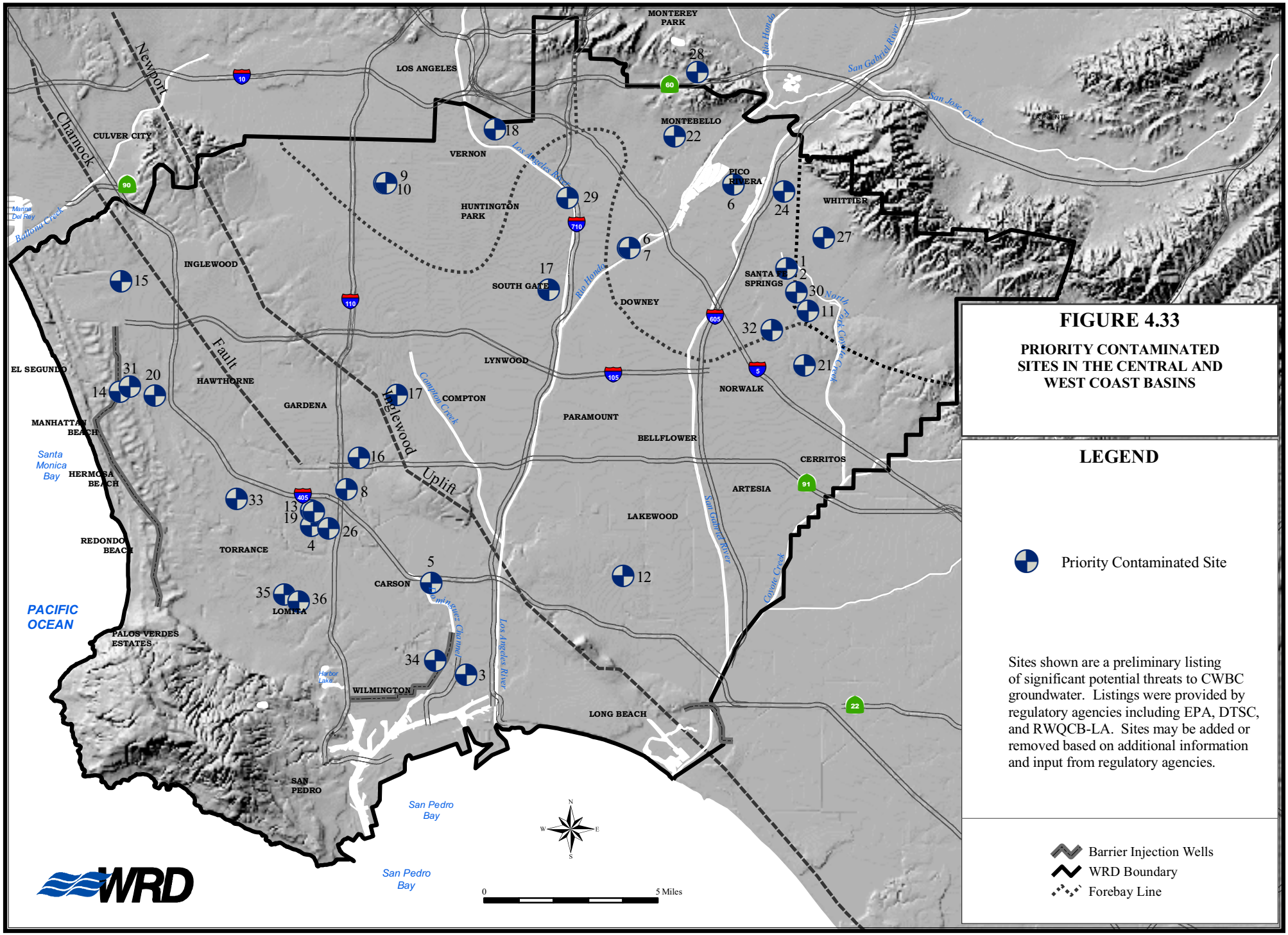

FIGURE 4.33

PRIORITY CONTAMINATED SITES IN THE CENTRAL AND WEST COAST BASINS

LEGEND

Priority Contaminated Site

Sites shown are a preliminary listing of significant potential threats to CWBC groundwater. Listings were provided by regulatory agencies including EPA, DTSC, and RWQCB-LA. Sites may be added or removed based on additional information and input from regulatory agencies.

Barrier Injection Wells
WRD Boundary
Forebay Line

"To provide, protect and preserve high quality groundwater through innovative, cost-effective and environmentally sensitive basin management practices for the benefit of residents and businesses of the Central and West Coast Basins"

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